Life skills development through youth sport:

Antecedents, consequences, and measurement

By

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Abstract

Youth sport is acknowledged as an ideal setting for promoting positive youth development. In particular, youth sport participation has been linked to life skills development and psychological well-being. The coaching climate has been proposed to play a role in facilitating such positive outcomes. Nonetheless, few measures exist to examine life skills development through sport and it is unclear how positive youth development may be facilitated by the coach. Using existing and newly developed measures, this thesis examined how the coaching climate is related to life skills development and psychological well-being in youth sport participants.

Phase 1 of this programme of research investigated Benson and Saito's (2001) conceptual framework for youth development theory and research within sport. Study 1 examined a model whereby the coaching climate is related to life skills development (personal and social skills, cognitive skills, goal setting, and initiative); which, in turn, is related to participants' psychological well-being (self-esteem, positive affect, and satisfaction with life). Data from 202 youth sport participants suggested that an autonomy supportive coaching climate was positively related to all four life skills. Further analysis revealed that the development of personal and social skills mediated the relationships between coach autonomy support and all three indices of psychological well-being. However, the validity of the scale used to measure life skills was brought into question during this study. Therefore, the studies which follow developed and validated a new scale which could accurately assess eight key life skills young people learn through sport.

Phase 2 of this programme of research involved developing and validating a scale which measures life skills development through sport. Study 2 outlines the initial

development of a scale which would assess whether young people learn the following life skills through sport: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. This study involved defining each of the eight life skills, deciding what components made up each life skill and developing items which could assess each life skill. The initial item pool was reviewed by 39 academics, with between two and seven experts assessing the items for each of the eight life skills. Using the ratings and comments provided by experts, the first version of the Life Skills Scale for Sport (LSSS) was developed.

Study 3 reduced the number of items contained within the LSSS from 144 to 47 items using both exploratory factor analysis (EFA) and descriptive statistics. For this task, 338 youth sport participants completed the LSSS. EFA results supported the unidimensional factor structure of each of the eight subscales. Each subscale also displayed adequate internal consistency reliability.

Study 4 examined the factor structure of the LSSS using confirmatory factor analysis (CFA) with an independent sample of 223 youth sport participants. After the removal of four emotional skills items, seven of the eight subscales and the revised 43-item scale displayed adequate model fit. Results supported both the convergent and discriminant validity of the LSSS and each of the eight subscales displayed adequate internal consistency reliability.

Study 5 assessed the test-retest reliability of the LSSS with an independent sample of 37 youth sport participants. Each participant completed the scale on two occasions

which were two weeks apart. Results revealed that time 1 and time 2 scores were relatively unchanged over this two-week period, providing evidence of test-retest reliability.

Phase 3 of this programme of research involved re-testing Benson and Saito's (2001) framework. Study 6 retested the coaching climate – life skills development – psychological well-being model from Study 1 using the LSSS. Data from 326 youth sport participants suggested that an autonomy supportive coaching climate was positively related to young people learning teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. The total amount of life skills a young person developed through sport was positively related to their self-esteem, positive affect and satisfaction with life. Again, the factor structure and reliability of the scale was supported.

The findings from this PhD research suggest that the coaching climate plays an important role in young peoples' development through sport. Specifically, an autonomy supportive coaching climate was positively related to life skills development and psychological well-being in youth sport participants. This thesis also provides researchers with a valid and reliable measure of life skills development through sport. Future research using the LSSS should examine other factors (e.g., peer relationships) which may promote positive youth development through sport. Additionally, future studies can use the LSSS to examine the efficacy of existing programmes (e.g., the SUPER programme) which teach life skills through sport. Such research will help guide coaches and sports programmes efforts to promote positive youth development through sport.

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Chapter 1 – General Introduction

Youth Development

Youth or adolescence is regarded as the period of transition between childhood and adulthood (Berger, 2005) which begins at roughly 11 years and continues for a decade or so (Papalia, Olds, & Feldman, 2006). Steinberg (1993) has divided adolescence into early (11–14), middle (15–18), and late (19–21) phases. Although some people view youth sport as involving those as young as 3–4 years; in line with experts in the field of youth development, this thesis viewed youth as including those between 11–21 years. This period of life is of great importance and is marked by changes in young peoples' physical, cognitive, psychological and social development (Gestsdottir & Lerner, 2008). Thus, it is important that wider society helps young people to develop during these critical years.

Youth development focuses on promoting, during the second decade of life, the positive developmental experiences that are known or assumed to advance young peoples' health and well-being (Benson & Saito, 2000). According to Benson and Pittman (2001), as a field youth development is comprehensive, including a host of inputs (e.g., programmes, opportunities, and relationships), in a variety of contexts (e.g., sports, school, and the family), necessary to address a range of developmental targets (e.g., health, well-being, and life skills). In essence, the youth development approach focuses on three important questions: (1) what kind of human beings do we want young people to be, (2) what skills do young people need to succeed during adolescence and adulthood, and (3) what skills do we want young people to learn (MacDonald & Valdivieso, 2001). These questions focus on the potential of young people to learn the skills required to succeed in life and become productive members of society. However, this positive approach to youth development is only a recent phenomenon.

Positive Youth Development

Whereas previous youth development approaches focused on preventing problem behaviors, a new vision of youth development has emerged within the last fifteen years called positive youth development (Holt, 2008). At its core, positive youth development refers to strength-based and asset-building approaches to developmental research in which young people are viewed as 'resources to be developed' rather than 'problems to be solved' (Holt, Sehn, Spence, Newton, & Ball, 2012). Specifically, positive youth development focuses on three primary areas: (1) developing life skills in young people, (2) enhancing young peoples' health and well-being, and (3) developing programmes that promote young peoples' development (Jones, Dunn, Holt, Sullivan, & Bloom, 2011; King et al., 2005; Danish, 2002b). However, in what settings does positive youth development occur?

School is arguably the most obvious setting for promoting young peoples' learning and development, although development does occur within a variety of settings outside of school (McCluskey & Treffinger, 1998). Extracurricular activities such as music, drama, church groups, student government, and even chess clubs are settings which are purported to promote positive youth development (Larson, 2000). Substantial research evidence has shown that such activities can have a positive effect on participants' educational attainment, life skills development, and well-being (Barber, Eccles, & Stone, 2001; Fredricks & Eccles, 2006; Larson, Hansen, & Moneta, 2006; Marsh, 1992). Students report that they learn more about skills such as goal setting, problem solving, and time management in extracurricular activities as compared to when they are attending school or hanging out with friends (Hanson, Larson, & Dworkin, 2003; Larson et al., 2006). Another type of extracurricular activity which has received a great deal of research attention is

sport. According to Marsh (1992), sport has the greatest number of positive effects of any extracurricular activity.

Positive Youth Development Through Sport

There are a number of features which make sport different from other extracurricular activities. To begin with, sport has been proposed as the most popular and time consuming leisure activity for young people (Duffett & Johnson, 2004; Hansen & Larson, 2007). According to Larson (2000), the average American adolescent spends 4–6 hours per week taking part in sport and somewhat less in most European countries. Within Scotland, 79% (387,495) of young people between 8–15 years and 41% (246,820) of those between 16–24 years take part in sport on a weekly basis (Sports Scotland, 2008). Such numbers make sport an obvious setting for developing young people. But it is not only the high participation numbers that makes sport an ideal setting for youth development. Others suggest that it is the interactive, emotional, and socially involved nature of sports that provide opportunities for development (Danish, Forneris, Hodge, & Heke, 2004; Hellison, Martinek, & Walsh, 2008; Fraser-Thomas, Côté, & Deakin, 2005). Such a setting provides young people with the specific opportunities required to learn skills like teamwork, emotional control, and social skills. Sport also has other advantages which make it an ideal activity for promoting positive youth development. First, the voluntary nature of sport should mean that young people will fully engage with the activity. This heightened engagement makes sport a potent context for teaching valuable life lessons and for promoting overall development (Gould & Carson, 2010). Second, sport has the advantage of providing a combination of attention, challenge, and motivation that is not evident in schooling, or in other non-voluntary or unstructured activities (Hansen et al., 2003).

According to Larson (2000), attention, challenge, and motivation are necessary for any type of development to take place. Lastly, due to high attendance rates and sustained participation, sport has been proposed as an ideal setting to promote positive young development (McLaughlin, Irby, & Langman, 1994; Roth & Brooks-Gunn, 2003). In combination, all of these factors make sport a great setting for promoting young peoples' development – a notion which has long been recognized by those involved in sport.

According to Sandford, Armour, and Warmington (2006), it is a cherished belief within physical education and sport communities that sport has the potential to offer young people a range of physical, psychological, and social benefits. Some suggest that sport can accomplish three important things in young peoples' development: physical health through physical activity, the development of key motor skills, and psychosocial development through the learning of life skills (Côté & Fraser-Thomas, 2007). Others have conceptualised sports participation in terms of three goals: the public health goal, the educative goal, and the elite development goal (Siedentop, 2002). The most often cited goal of youth sport is the educative goal, where sport provides young people with developmental and educational benefits (Siedentop, 2002). In this regard, Williams, Strean, and García -Bengoechea (2002) suggest that recreational experiences play a significant part in the development of adolescents, as these experiences bridge the gap between childhood play and the responsibility that comes with adulthood. In summary, many researchers agree that sport provides young people with the opportunities and experiences required to learn the skills necessary to prosper and succeed as an adult.

There is a great deal of research supporting the beneficial effects of sport for young people. Some of the benefits of youth sport include greater academic attainment (Eccles,

Barber, Stone, & Hunt, 2003), greater likelihood of attending and graduating from university (Marsh, 1993), higher career prospects (Barber et al., 2001), the development of a variety of life skills (Camiré, Trudel, & Forneris, 2009; MacDonald, Côté, Eys, & Deakin, 2011), and increased psychological well-being (Broh, 2002; McHale et al., 2005).

Youth sport has also been associated with some negative outcomes such as increased alcohol consumption (Eccles et al., 2003), negative peer interactions, performance anxiety, and stress (Dworkin & Larson, 2006; Larson et al., 2006). Some researchers suggest that youth sport is not focused on developing young people and what dominates is the performance oriented/elite development approach and the teaching of motor skills (Hardman & Marshall, 2005). This is somewhat unfortunate as of the millions of young people who play sports, only a small percentage will become involved in sport as a career (Danish, Forneris, & Wallace, 2005). Thus, the longer term benefits for young people and society would be best served by sport having a more developmental agenda (Bailey et al., 2010). Echoing such sentiments, Côté, Strachan, and Fraser-Thomas (2008) proposed that coaches, parents, and administrators of youth sport programmes should have participants' development as their top priority.

Addressing this developmental agenda, there has been a growing acknowledgement that youth sport can provide a context for positive youth development. For instance, organisations such as the Winning Scotland Foundation (2010) view sport as a context where young people can learn life lessons that will enable them to achieve their full potential. This foundation aims to replace the 'win at all costs' mentality which is prevalent in youth sport with the goal of using sport to teach young people life skills. Similar initiatives include the Promoting Adolescent Physical Activity project (PAPA;

Duda, 2013), which involves a theoretically grounded and evidence-based coach education programme. PAPA is a Europe wide programme aimed at enhancing young peoples' development, health, and well-being through sport. Others view sport as a tool for social outreach, wherein sports-based youth programmes can be used to positively develop 'at-risk' youth (Hartmann, 2003). It also appears that wider society has an appreciation for the positive affect sport can have on young people. For example, 92% of 2,001 Canadians surveyed by Mulholland (2008) suggested that sport can be a positive avenue of development for young people and many adults attribute valuable life lessons to their experiences in sport (Conroy & Coatsworth, 2006).

Although there is a growing acknowledgement that youth sport can provide opportunities for promoting positive youth development, there is a lack of research explaining why or how sport can be beneficial for young people. In particular, little is known about the specific content or implementation strategies that are likely to account for positive outcomes in young people (Petitpas, Cornelius, Van Raalte, & Jones, 2005). That is, the characteristics of sports programmes that encourage positive youth development remain relatively unexamined (Holt & Sehn, 2008). Furthermore, little research has investigated whether life skills learned through sport help adolescents in other domains. Before investigating the factors involved in promoting youth development through sport, it is important to explore how positive youth development is conceptualized.

Conceptualisations of Positive Youth Development

Various conceptualisations of positive youth development have been proposed within the youth development literature. Primarily these conceptualisations have focused on the desired outcomes of positive youth development. One popular conceptualisation of

positive youth development is Lerner, Brentano, Dowling, and Anderson's (2002) 5Cs model of positive youth development. The 5Cs are said to represent the key outcomes of positive youth development and include:

1. Competence (e.g., intellectual ability, social and behavioural skills).
2. Character (e.g., integrity and morality).
3. Connection (e.g., positive bonds with people and institutions).
4. Confidence (e.g., positive self-regard and self-efficacy).
5. Caring/Compassion (e.g., values, empathy, and social justice).

Collectively these five outcomes will lead to the 6th 'C' of positive youth development; contribution, which involves contributing positively to self, family, community, and civil society (Lerner, Almerghi, Theokas, & Lerner, 2005). Some research on youth development programmes supports the proposition that the 5Cs constitute the structure of positive youth development (Lerner, von Eye, Lerner, Lewin-Bizan, & Bowers, 2010). For instance, Phelps et al. (2009) used existing measures to assess the 5Cs in 1,893 American adolescents participating in the 4-H Study of Positive Youth Development – a longitudinal investigation of young peoples' health and development which was funded by the 4H youth organisation. These researchers found support for their five-factor measure of the 5Cs with this group. However, a problem for those researching youth sport is the lack of accepted measures to assess the 5Cs within sport and the absence of empirical evidence supporting the existence of the 5Cs within sport. This is illustrated by a study which assessed the outcomes of positive youth development using Phelps et al.'s (2009) 78-item measure of the 5Cs (Jones et al., 2011). Using a sample of 258 Canadian youth sport participants, these researchers failed to confirm the five-factor structure of the 5Cs model. Instead, EFA

revealed that sport may involve only two factors – prosocial values and competence/confidence.

Others believe that positive youth development involves more than two or even five outcomes. An alternative conceptualization of positive youth development is Benson and colleagues 40 developmental assets (Benson, 2006; Benson, Leffert, Scales, & Blyth, 1998; Leffert et al., 1998; Scales & Leffert, 1999; Scales, Benson, Leffert, & Blyth., 2000). These assets are divided into two broad categories – external assets and internal assets. External assets represent strengths within a young person's environment, whereas internal assets refer to the strengths that the young person possesses. Internal assets are akin to what sports psychologists would call life skills (Gould & Carson, 2008). According to Benson (2006), there are four categories of external assets and four categories of internal assets. The external assets include:

1. Support (e.g., family support, a caring neighborhood, and positive adult relationships).
2. Empowerment (e.g., the community values its adolescents and young people are viewed as valuable resources to be developed).
3. Boundaries and expectations (e.g., families set boundaries and have high expectations for their children).
4. Constructive use of time (e.g., involvment in creative activities and sports).

The internal assets include:

1. Commitment to learning (e.g., through achievement motivation and school engagement).
2. Positive values (e.g., honesty and responsibility).

3. Social competencies (e.g., interpersonal competence and resistance to peer pressure).
4. Positive identity (e.g., a sense of purpose and self-esteem).

All of these assets can be measured using the 160-item Profile of Student Life Survey which was developed by the Search Institute (2012) – an American organisation focused on promoting young peoples' development. Data from 148,189 American adolescents suggests that the possession of these developmental assets promotes thriving behaviours and reduces risk behaviours in young people (Benson, 2006). Specifically, these data showed that the number of assets a young person possesses was positively related to school success, helping others, valuing diversity, maintaining good health, exhibiting leadership, avoiding dangerous situations, and overcoming adversity. Additionally, the number of assets was negatively associated with alcohol and tobacco consumption, illicit drug use, depression or suicide, antisocial behaviour, violence, school problems, drink driving, and gambling. Despite large-scale data assessing the developmental assets in young people, there is the lack of empirical evidence supporting the existence of these developmental assets within sport. Only one study by Fraser-Thomas, Côté, and MacDonald (2010) has assessed the developmental assets within youth sport. This study used the 58-item Developmental Assets Profile (Search Institute, 2004) – an earlier version of the Profile of Student Life Survey – to assess the four internal assets and four external assets. These researchers failed to provide any statistical information which supported the eight-factor structure of this measure within sport.

Despite their popularity within youth development research, neither the 5Cs nor the 40 developmental assets have received much empirical attention or support within sport.

Instead, the sport psychology literature has focused on the life skills that young people are proposed to develop through sport (e.g., Holt, Black, & Tink, 2006; Gould & Carson, 2008). Furthermore, long before the term 'positive youth development' was coined, sport psychology researchers were investigating the positive outcomes of sport such as increased self-esteem (Smith & Smoll, 1990; Weiss, McAuley, Ebbeck, & Wiese, 1990). Despite the long tradition of investigating the positive outcomes of sport, it is only recently that Johnston, Harwood, and Minniti (2013) reviewed all of the positive assets young people develop through sport. After reviewing 34 key papers dealing with youth development through sport, these researchers listed 113 terms that pertained to positive youth development. Some of the most commonly cited terms were teamwork, goal setting, time management, emotional self-regulation, communication, social skills, leadership, problem solving, decision making, planning, personal responsibility, motivation/effort, and self-esteem. This was an important study as it informs us of the key assets or life skills young people develop through sport. Despite this progress in classifying the life skills and positive outcomes of sport, it is important to understand how and why young people learn these life skills through sport, and whether these life skills help young people in other areas of their lives. One way researchers have attempted to address these issues is by developing models of youth development through sport.

Models of Youth Development Through Sport

Model building is one way researchers can make sense of the various factors that impact a phenomenon or situation, their possible interrelationships and causal sequence (Bailey et al., 2010). Benson and Saito (2000) suggest that if we are to close the gap between theory and application, we need to articulate models to guide the science of youth

development. There are a variety of models that deal specifically with youth development through sport. Outlined below are a few of the most prominent models.

To begin with, Petitpas et al. (2005) outlined their framework for planning youth sport programmes that promote psychosocial development. This framework involves four specific components which encourage youth development:

1. Context (e.g., a motivating activity, safe environment, and valued role within the group).
2. External assets (e.g., a close relationship with adult mentors and parental monitoring).
3. Internal assets (e.g., learning teamwork, goal setting, and communication skills).
4. Research and evaluation (e.g., assessing the outcomes and processes of youth development).

By including external and internal assets, this framework incorporated Benson's (2006) notion of environmental assets and personal assets. In addition, this framework clearly highlights the importance of assessing the outcomes of sport and the processes which cause such positive outcomes.

Another model which incorporated Benson's (2006) developmental assets, along with Lerner et al.'s (2002) 5Cs, is the applied sport-programming model of youth development (Fraser-Thomas et al., 2005). This model proposed that sports organisations, coaches, and parents are responsible for the design and implementation of sports programmes. These researchers proposed that appropriately designed and implemented youth sport programmes foster the 40 developmental assets in participants. In turn, these assets are said to enhance participants' possession of the 5Cs (competence, confidence,

connection, compassion, and character). However, a major criticism of this model is the lack of support for either the 40 developmental assets or the 5Cs within sport.

Some researchers have focused their attention on the effect of interventions/coach training on young peoples' development. For example, Conroy and Coatsworth (2006) proposed their conceptual model of coach training effects on youth development. This model outlines that coach training interventions impact three variables: observed coach behaviors, youth perceptions of the coach, and youth perceptions of themselves. In turn, these three variables lead to both proximal outcomes (e.g., achievement motivation and situational motivation) and distal outcomes (e.g., developmental competence, initiative, and a future perspective). To the best of the current author's knowledge, no study has assessed this model within youth sport.

Other researchers have focused on life skills development – an area which has received a great deal of attention within the literature. After reviewing the life skills development through sport literature, Gould and Carson (2008) proposed their model of coaching life skills through sport. This model includes five key aspects:

1. Pre-existing make-up of the athlete (e.g., a coach should take the athlete's personality and background into account when teaching life skills).
2. Sport participation experience (e.g., the coach's characteristics and the teaching of life skills directly or indirectly affect the learning of life skills).
3. Explanations of personal development (e.g., why a positive identity and positive social norms are important) and life skills development (e.g., what life skills are being taught and how are they learned).

4. Positive outcomes (e.g., physical, intellectual, and psychosocial) and negative outcomes (e.g., injury, burnout, and dropout).
5. Transferability (e.g., the ability to apply life skills in different settings).

The first component of the model suggests that coaches need to understand their athlete/s when coaching life skills. For example, a coach may take a different approach when teaching social skills to an extroverted athlete as opposed to an introverted athlete. The second component focuses on the teaching of life skills; in particular, factors which are critical to the learning of life skills and whether life skills are taught directly or indirectly. In this regard, it is possible that skills such as goal setting may be taught directly, whereas social skills may be learnt indirectly through being part of a team. The third component focuses on how life skills development occurs and how it influences the overall development of the athlete. For example, do increased social skills help athletes' to have a positive identity? The fourth component examines a range of both positive and negative outcomes of sport. According to Gould and Carson (2008), the more life skills a young person possesses, the more likely they will develop in a positive manner. The fifth component deals with the transfer of life skills to non-sport settings. In particular, the authors suggest that various factors influence transfer including: the perceived value of the life skill, an athlete's confidence in their ability to transfer the life skill, an athlete's understanding of how to transfer a particular life skill, and support or encouragement to transfer the life skill.

The discerning reader will notice that there is considerable overlap between the four models of youth development through sport reviewed in this section. For instance, all models deal with various inputs (e.g., the coaching climate) that affect the positive

outcomes of sport (e.g., life skills development). An advantage of these models is that they are sport-specific models which address the key persons within youth sport (e.g., coaches) and cover some of the life skills young people are said to learn through sport (e.g., teamwork, goal setting, and communication). A criticism of these models is that they fail to address in any detail the well-being outcomes of sport. This is surprising given that a great deal of research in youth sport has focused on well-being outcomes such as self-esteem, positive affect, and life satisfaction (Standage & Gillison, 2007; Smith, Ntoumanis, & Duda, 2007). A model which does include well-being outcomes is Benson and Saito's (2001) conceptual framework for youth development theory and research.

Benson and Saito's (2001) Conceptual Framework

When developing their framework, Benson and Saito (2001) began with this working definition: "youth development mobilizes programs, organizations, systems and communities to build developmental strengths in order to promote health and well-being" (p. 144). Using this definition, these researchers developed a framework which suggested that youth development inputs (e.g., the coaching climate) are related to young people developing their strengths (e.g., their life skills); which, in turn, are related to young peoples' health and well-being. An advantage of this framework is that it allows researchers to investigate how the coaching climate can affect the development of life skills and whether these life skills are related to health and well-being outcomes. This is important as positive youth development incorporates three key aspects: the developmental climate (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002), life skills development (Jones et al., 2011), and participants' health and well-being (King et al., 2005; Park, 2004). This framework clearly distinguishes life skills development from other positive outcomes,

which allows researchers to test whether the life skills learned through sport affect participants' health and well-being. This is a crucial issue as the ability of life skills to affect other areas of young peoples' lives (i.e., the transfer of life skills) is an important aspect of positive youth development through sport (Theokas, Danish, Hodge, Heke, & Forneris, 2008). In sum, this framework allows researchers to investigate both the antecedents and consequences of life skills development through sport.

Aims of the Research

The aim of this programme of PhD research was to investigate Benson and Saito's (2001) framework for youth development within the youth sport context. To the best of the author's knowledge, no other study has investigated this framework for youth development within sport. Specifically, the research aimed to investigate both the antecedents and consequences of life skills development by addressing these research questions:

1. Are Scottish young people learning life skills through youth sport?
2. What type of coaching climate is related to young people developing life skills?
3. Do life skills learned through sport affect participants' psychological well-being?
4. Does the total amount of life skills developed through sport affect participants' psychological well-being?

After finding existing measures of life skills development to be inadequate, this research also involved the development and validation of a scale which assesses life skills development through sport. This scale would measure eight life skills young people are purported to learn through sport: teamwork, goal setting, time management, emotional

skills, interpersonal communication, social skills, leadership, and problem solving and decision making.

Structure of the Thesis

Chapter 2 provides a review of the literature on positive youth development through sport, focusing on the life skills young people are reported to learn through sport. In this chapter, I also discuss how the coaching climate is proposed to impact life skills development and how the life skills developed through sport may relate to other positive outcomes. Chapter 3 describes Study 1, which involved 202 youth sport participants and investigated Benson and Saito's (2001) framework for youth development. Using an existing measure of life skills development, this study assessed whether life skills development mediates the relationship between coach autonomy support and participants' psychological well-being. Given the lack of validity evidence for the measure used to assess life skills in Study 1, Chapter 4 describes the development and validation of the Life Skills Scale for Sport (LSSS). The first part of Chapter 4 describes the importance of measurement in both psychology and sport psychology, outlines best practices for scale development, and explains why it is important for young people to develop key life skills. The second part of Chapter 4 details a series of studies (Studies 2–5) which were conducted to develop and validate the LSSS. Study 2 describes the selection of the eight life skills included in the scale, how these life skills were defined, what components comprise each life skill, how scale items were developed, and how 39 academics assessed the content validity of items. Study 3 describes how the number of items in the scale was reduced from 144 to 47 items after a sample of 338 youth sport participants completed the LSSS. Both EFA and descriptive statistics were used during this scale reduction process and the

factor structure of each subscale was examined. Study 4 assessed the factor structure of the LSSS using a sample of 223 youth sport participants. This involved conducting a CFA on the scale, refining the scale as required, and assessing both convergent and discriminant validity. Study 5 assessed the test-retest reliability of the scale using a sample of 37 youth sport participants. Chapter 5 describes Study 6 which re-tested Benson and Saito's (2001) framework for youth development using the LSSS. To conclude, Chapter 6 provides an overall discussion of the programme of research, highlights some limitations of the research, and suggests areas of future research.

Research Paradigm and Approach

Guba and Lincoln (1994) defined a research paradigm as "the basic belief system or worldview that guides the investigator" (p. 105). The paradigm which guided my research approach was postpositivism. Postpositivism is also called the "scientific method" or quantitative research (Creswell, 2003). According to Phillips and Burbules (2000), some of the assumptions of postpositivism include: (a) the evidence obtained through research is fallible, (b) research involves theory testing and refinement, (c) data and research evidence shape knowledge, (d) researchers propose the relationships between variables via research hypotheses and conduct studies to either support or refute these hypotheses, and (e) researcher objectivity and accurate measurement is an essential part of scientific inquiry. Other key elements of postpositivism include the importance of replicating findings, the reliability and validity of measurement, and the use of statistical procedures to test research hypotheses (Creswell, 2003; Guba & Lincoln, 1994; Johnson & Christensen, 2004). The quantitative studies conducted during this programme of research clearly followed the key

assumptions and elements of postpositivism. But why was such an approach taken during this PhD research?

Cresswell (2003) proposed that two factors affect the decision to use a quantitative, qualitative, or mixed methods approach. First, the researcher often tries to find a match between the problem and the research approach. A clear problem for life skills development through sport research was that many studies failed to use any framework or theory to guide their research and little evidence existed to support the psychometric properties of life skills measures. Therefore, testing Benson and Saito's (2001) framework using quantitative measures and examining the reliability and validity of life skills measures were important developments for the field. Second, the researcher's training and experience influence their research approach. In this regard, it would be remiss not to point out that the majority of my training involved quantitative methods and it is likely that these experiences influenced my choice of a quantitative approach. Another important factor influencing my quantitative approach was that this approach would allow me to answer the research questions outlined on page 16 of this thesis and generalise my findings to British youth sport participants. In sum, all of these factors meant that I adopted a quantitative research approach during my programme of research.

Chapter 2 – Literature Review

The History of Positive Youth Development

For the first 85 years of the scientific study of youth development, the field was framed almost exclusively by the deficit perspective which viewed young people through a negative lens (Lerner, 2005). This began with Granville Stanley Hall, who was the founder of the scientific study of youth development. Hall (1904) launched the study of adolescence with a theory that saw adolescence as a period of universal 'storm and stress'. Continuing in this vain, Erik Erikson (1959, 1968) proposed that young people were involved in an identity crisis that needed resolving. Later still, Anna Freud (1969) proposed that adolescence was a period of developmental disturbances involving family and peer relationships, ego defences, and changes in attitudes and values. In short, early youth development researchers viewed young people as deficient, troublesome, and at-risk for behaving negatively. It was not until the 1960s that these negative views of adolescence began to be challenged (Lerner, 2005).

During the 1960s, research appeared which showed that this negative view of adolescence was not universally true (e.g., Bandura, 1964; Douvan & Adelson, 1966; Offer, 1969). This era was marked by increasing documentation of the diversity of youth development and further emphasis was placed on how both the individual and the context affect youth development (Lerner, 2005). In the 1980s, concerns were also raised with efforts that focused solely on problem prevention (i.e., preventing substance abuse, conduct disorders, and delinquent behaviour) rather than the promotion of healthy development (Catalano et al., 2002). Research in the late 80s and early 90s showed that prevention-based approaches produced little or no results (Connell, Gambone, & Smith, 2001). Arguments against focusing on problem behaviours were best illustrated by Pittman, Irby,

and Ferber's (2001) quote: "problem-free is not fully prepared" (p. 5). That is, just because a young person is not displaying problem behaviours, does not mean that he/she will develop in a positive manner. Moreover, by focusing on eliminating deficits, one ignores that young people have strengths which can be built upon. Such changes in how young people were viewed brought about a new vision of youth development which emerged during the 1990s.

This vision was labelled 'positive youth development' (Benson, 1990). According to Benson (2003), the origins of positive youth development come from academic research, the voices of youth workers, the discussion of national policies, and funding initiatives designed to promote the healthy development of young people. Positive youth development is an 'umbrella' term which refers to strength-based and asset-building approaches to developmental research in which young people are viewed as 'resources to be developed' rather than 'problems to be solved' (Holt et al., 2012). However, there is some debate in the literature on what constitutes positive youth development. Hamilton (1999) explained that the term positive youth development has been used in at least three ways. Firstly, positive youth development has been discussed as a natural developmental process which allows adolescents to understand and act on their worlds in manners supportive of themselves and society. Secondly, the term refers to a philosophy for youth programming, which involves active support from youth-serving organisations for enhancing the developing capacities of adolescents. Thirdly, positive youth development has been discussed as a specific set of programming guidelines that can promote young peoples' development (e.g., Blum, 2003; Eccles & Gootman, 2002; Lerner, 2004; Roth & Brooks-Gunn, 2003).

Despite differences in the use of the term, the main assumption of positive youth development is that building on naturally occurring resources is more effective than addressing the deficits of human functioning (Vella, Oades, & Crowe, 2011). In other words, it is more productive to build young peoples' strengths rather than attempting to eliminate their deficits. There are also strengths within the environment that can support young peoples' development. These strengths in the environment are termed 'ecological developmental assets' (Benson, Scales, Hamilton, & Semsa, 2006). A key proposition of positive youth development is that if the strengths of young people are aligned with 'ecological developmental assets', then every young persons' development can be improved (Lerner, 2005, 2009; Lerner, Phelps, Forman, & Bowers, 2009). Based on this proposition, two broad strategies exist for promoting positive youth development (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 1999). There is the life skills approach which focuses on teaching young people the skills required for life, and the environmental/organisational approach which focuses on tailoring the environment/organisation to best promote young peoples' development. The present thesis focused on both the environmental and life skills approach to positive youth development. It is to the life skills approach which I now turn.

Life Skills Development Through Sport

According to Hodge and Danish (1999), life skills have been defined as the skills that are required to deal with the demands and challenges of everyday life. Skills such as teamwork, leadership, and communication are viewed as life skills. McCallister, Blinde, and Weiss (2000) suggest that adolescence is a critical period for learning the life skills required for adulthood. One setting where young people are proposed to learn life skills is

sport. In fact, recent qualitative, quantitative, and intervention-based research demonstrates that young people learn a variety of life skills through sport.

Qualitative Life Skills Research

A variety of qualitative studies have explored the life skills young people are reported to learn through sport. To begin with, Holt et al. (2006) conducted a study which examined the positive outcomes young people gain from sport. After interviewing 40 Canadian former youth sport participants, these researchers concluded that the key life skills young people learn through sport are initiative, teamwork, and social skills. However, as they were interviewing former youth sport participants, a major limitation of this study was the ability of participants to correctly recall their youth sport experiences.

With this limitation in mind, Holt, Tink, Mandigo, and Fox (2008) conducted a follow-up study with 12 members of a Canadian high school soccer team. This study involved interviewing both players and the coach of this team, along with observations of the team during practices and competitions. The main findings of the study were that players reported learning about initiative (which includes goal setting, time management, and personal responsibility), respect, teamwork, and leadership through playing soccer. The researchers reported that none of these skills were taught directly, rather the coach provided the structure necessary for players to display these skills. For instance, the coach punished or reprimanded players for failing to display respect.

Focusing on swimming, Fraser-Thomas and Côté (2009) investigated whether competitive youth swimmers believed they had positive developmental experiences through swimming. Based on interviews with 22 Canadian swimmers, these researchers concluded that swimming facilitated many positive developmental experiences relating to

challenge, meaningful adult and peer relationships, a sense of community, and other life experiences. Specifically, challenge referred to work ethic, commitment, discipline, and perseverance. Meaningful adult relationships involved coaches being good role models, communicators, and forming connections with athletes. Meaningful peer relationships involved developing close friendships, having opportunities to lead others, and developing relationships with different aged peers. Other life experiences referred to time management, communication, resilience, independence, confidence, identity formation, self-awareness, respect, and assertiveness. Unlike the previous two studies, this study identified a broad range of life skills and outcomes which participants gain through sport. Nonetheless, a limiting factor for this study was its focus on one sport, which limits the generalisability of the findings.

Addressing this weakness, Camiré et al. (2009) investigated whether participants learn life skills through a variety of sports including basketball, volleyball, soccer, and badminton. After interviewing 10 male and 10 female Canadian athletes, the authors concluded that these sports taught participants about initiative, leadership, social skills, teamwork, and time management. Although it investigated multiple sports, like all of the above studies, this study relied solely on participants' perceptions. This poses the question – what life skills do coaches believe their athletes learn through sport?

To address this question, Strachan, Côté, and Deakin (2011) interviewed 5 Canadian elite-level coaches from swimming, diving, and gymnastics. After conducting a series of interviews, these researchers concluded that coaches believe athletes learn mental toughness, decision making, goal setting, work ethic, time management, social skills,

teamwork, and organisational skills through sport. These results seem to corroborate athletes' reports that they learn a variety of life skills through sport.

In summary, these qualitative studies suggest that young people learn a variety of life skills through sport. Some of the most frequently cited life skills included teamwork, leadership, time management, goal setting, and social skills. To provide a fuller picture of the life skills young people develop through sport, quantitative methods of research are also required. Thus, researchers have investigated life skills development using a quantitative approach.

Quantitative Life Skills Research

Fundamental to the quantitative approach to life skills research was Hansen and Larson's (2002) development of the Youth Experiences Survey 1.0 (YES 1.0). This survey was developed to investigate youth development through extracurricular activities. The YES 1.0 assessed the following developmental experiences: identity work, initiative, emotional regulation, teamwork and social skills, interpersonal relationships, adult networks, and negative experiences. These developmental experiences refer to the learning experiences or life skills young people develop through extracurricular activities. The activities these researchers investigated included religious groups, music groups, drama, and sport.

Within sport, a study by Dworkin, Larson, and Hansen (2003) established that American participants learned about initiative, emotional regulation, teamwork, and social skills through sport. Larson (2000) highlighted initiative as an essential skill which young people need to develop. Initiative involves a number of skills including goal setting, time management, problem solving, and effort. A follow-up study by Larson et al. (2006)

suggested that American sports participants reported higher rates of initiative, emotional regulation, and teamwork experiences than those participating in other activities (e.g., performance arts and academic clubs). This was the first study to suggest that sport may be a particularly important context for the development of certain life skills.

Building on the research involving extracurricular activities, Strachan, Côté and Deakin (2009) used a later version of the YES 1.0 (the YES 2.0; Hansen & Larson, 2005) to investigate young peoples' life skills development through sport. Using a sample of 74 Canadian athletes from four sports, these researchers found that participants learned about initiative, teamwork, and social skills through their involvement in sport. A limitation of this study was that the emotional regulation subscale of the YES 2.0 displayed a less than adequate internal consistency reliability with this small sample.

A later study by Taylor and Bruner (2012) used the emotional regulation, leadership, and goal setting subscales of the YES 2.0 with 133 British male soccer players. These researchers reported that participants learned moderate to high levels of emotional regulation, leadership, and goal setting skills through playing soccer. Furthermore, each of the three subscales of the YES 2.0 used in this study displayed adequate internal consistency reliability with this sample.

Another study which used the YES 2.0 was conducted by Gould, Flett, and Lauer (2012) with 239 American high school baseball and softball players. These researchers found that participants most often perceived initiative, teamwork, and social skills as the benefits they derived from sports. However, the emotional regulation subscale of the survey again displayed poor internal consistency reliability with this sample. This may have been due to the fact that the survey was never revised for the youth sport context,

which is usually common practice when using a scale within a new setting (e.g., Weiss & Smith, 1999). Thus, it was only logical that researchers would attempt to develop a sport-specific version of the YES 2.0.

Taking up this task, MacDonald, Côté, Eys, and Deakin (2012) used EFA to analyse the factor structure of the YES 2.0. Using a sample of 637 Canadian athletes from 32 different sports, these researchers revised the scale into four positive experiences subscales (personal and social skills, cognitive skills, goal setting, and initiative) and one negative experiences subscale. The revised measure was called the Youth Experiences Survey for Sport (YES-S).

The first study to utilise the YES-S was conducted by MacDonald and colleagues (2011) using a sample of 510 Canadian participants from a range of youth sports. Overall, the results of this study suggested that participants learned 'quite a bit' about personal and social skills, goal setting, and initiative through their sports participation. In contrast, participants seemed to learn less about cognitive skills. Regarding measurement, each of the subscales displayed adequate internal consistency reliability with this large sample. A weakness of this study was the failure of the researchers to confirm the factor structure of the scale with this new sample – a common practice after developing a measure through EFA (Hurley et al., 1997).

A second study to use the YES-S was conducted by Vella, Oades, and Crowe (2013) with 455 Australian youth soccer players. Replicating the results of MacDonald et al. (2011), these researchers showed that participants learned most about personal and social skills, goal setting, and initiative, and least about cognitive skills through playing

soccer. Again, this study supported the internal consistency reliability of each subscale, but did not provide any information on the factor structure of the survey.

Moving away from the YES-S, a few studies have taken their own approach to measuring life skills development through sport. One such study was conducted by Gould, Chung, Smith, and White (2006) with 154 American youth sport coaches using a 99-item survey developed from the youth development through sport literature. Findings suggested that coaches strongly agreed that athletes learn teamwork, time management, goal setting, and work ethic through sport. However, a limitation of this study was that no information was provided on the psychometric properties of the survey used.

Another study by Forneris et al. (2012) investigated 915 Canadian athletes, coaches, administrators, and parents' views on life skills development through sport. These researchers developed a scale that assessed whether these parties felt sporting participation was having an impact on six particular life skills: goal setting, organisation, communication, self-control, concentration, and the ability to handle pressure. Results suggested that athletes perceived they learned a great deal about these life skills through sport. Interestingly, coaches, administrators, and parents believed that participants learned less about these life skills than the participants themselves, which highlights the challenges of comparing self and others reports when conducting research. Again, a weakness of this study was the lack of statistical information to support the measure used.

Combined, the quantitative studies described in this section suggest that sport teaches young people a variety of life skills. These life skills were similar to those reported through qualitative research. For example, teamwork, social skills, goal setting, problem solving, and time management were life skills which both qualitative and quantitative

studies cited as being developed through sport. Alongside these studies, some research has also investigated programmes designed to teach life skills through sport.

Intervention-Based Life Skills Research

One life skills programme is the Sport United to Promote Education and Recreation (SUPER), which is an integrated sport and life skills programme developed by Steven Danish (2002a) at Virginia Commonwealth University. The SUPER programme is organised as a series of sport clinics that involve three sets of activities: (1) learning the physical skills of a particular sport, (2) practicing the physical skills of that sport, and (3) learning life skills related to the sport and how these life skills can be applied outside of sport (Theokas et al., 2008). The programme consists of eighteen 20–30 minute sessions which teach communication, goal setting, self-talk, relaxation skills, managing emotions, and confidence.

Some research has evaluated the success of the SUPER programme. Papacharisis, Goudas, Danish, and Theodorakis (2005) tested an abbreviated version of the programme with Greek volleyball and soccer players. The eight 15-minute sessions used in this study involved discussion, group learning, written worksheets, and taught participants about goal setting, problem solving and positive thinking. Using two volleyball and two soccer teams (the second team in each sport functioned as a control group), these researchers found that the teams receiving the SUPER programme reported higher self-belief for goal setting, problem solving, and positive thinking than the control group teams. One criticism of the measure used to assess self-belief for goal setting, problem solving, and positive thinking was that the questions used were very narrow in scope. For example, the goal setting scale asked very similar questions throughout (e.g., “To achieve what I want, I set goals”, “I set

goals for many aspects of my life", and "Every time I want to achieve something, I set a new goal"). It is well known that using such similar questions can result in a high level of internal consistency reliability but convey far less information than more differentiated items (Clark & Watson, 1995). To fully cover self-belief for goal setting one needs to ask questions about the different aspects of goal setting (e.g., I set specific goals, I set measurable goals, I set realistic goals, etc.).

In America, the SUPER programme has also been applied to golf where it is called the First Tee programme (Petlichkoff, 2001). Along with implementing the SUPER programme, the First Tee programme is mastery-driven, empowering, and focused on continuous learning (Petitpas, Cornelius, & Van Raalte, 2008). Research by Weiss, Bolter, Bhalla, and Price (2007) has compared First Tee participants to youngsters in other organised activities. These researchers showed that First Tee participants scored higher on psychological outcomes such as self-efficacy to resist peer pressure than adolescents in other activities. First Tee participants also scored higher on their perceptions that they could transfer life skills learned through the programme to other settings. Finally, these researchers found a 47% improvement in First Tee participants' knowledge and understanding of life skills, coupled with significant positive changes reported by parents in areas such as communication, confidence, responsibility, school grades, and social skills.

Other research has also tested the efficacy of the First Tee programme. Brunelle, Danish, and Forneris (2007) assessed the impact of the programme with 100 American adolescents. Along with teaching participants life skills, this version of the programme required participants to commit to one year of teaching/co-teaching the First Tee programme. The participants were assessed directly after completing the programme and

six months into their teaching of the programme. Results of the life skills component indicated that scores on social responsibility, social interest, and goal knowledge increased from pre-test to post-test. The programme also enabled participants to be more knowledgeable about how to set goals and more confident in their ability to set goals and achieve them. Six-month follow-up results indicated that the programme had a positive impact on adolescents' prosocial values and that the teaching experience positively impacted adolescents' levels of empathic concern and social responsibility.

Although SUPER is the most prominent programme for teaching life skills through sports, several other programmes do exist. Gould and colleagues (2008) at Michigan State University have developed the Captains' Leadership Development Program which teaches leadership skills to prospective sports captains. The modules of this programme focus on effective leadership, communication, motivating others and team cohesion. Particular emphasis is given to the transfer of these skills from sport to other life situations. To the best of this author's knowledge, no research has been conducted to assess the impact of this programme.

Other life skills programmes focus on 'at-risk' youth, using sport as the hook to engage disadvantaged youth (Hartmann, 2003). Hellison (2003) developed the U.S. based Teaching Personal and Social Responsibility programme which is a physical activity based life skills intervention. This programme aims to teach participants teamwork, leadership, self-direction, effort, respect for others, and stresses the importance of transferring these skills to real life situations. After reviewing 26 American studies which used the Personal and Social Responsibility model, Hellison and Walsh (2002) concluded that the programme

led to improvements in participants' self-worth, self-direction, self-control, effort, teamwork, willingness to help others, communication skills, and interpersonal relations.

Another American based programme developed for at-risk youth is the Play it Smart programme (Petitpas, Van Raalte, Cornelius, & Presbrey, 2004). Given that pre-packaged interventions have a poor record of success with low-income urban youth, these programme developers decided that each Play it Smart programme should be structured independently to take advantage of local resources. Nonetheless, core components of the programme include: using academic coaches to improve participants' school performance, assisting participants to transfer skills they learn, setting specific goals (e.g., athletic, academic, and career goals), team building activities to foster constructive group norms, and providing participants with leadership roles outside of sport. A two-year pilot programme involving 252 American participants revealed that Play it Smart had its greatest effect on academic performance (Petitpas et al., 2004). Participants' grade point averages increased from 2.16 to 2.54 (on the 0–4 scale) and 83% of participants in their final year of high school went on to higher education.

Two British programmes which focus on at-risk youth are the Living for Sport and Outward Bound programmes (Sandford, Armour, & Duncombe, 2008). Both of these programmes are funded by large corporations (BSkyB and HSBC) and are targeted towards socially deprived youngsters using both sport and outdoor education as the learning environment. According to Sandford et al. (2008), findings using qualitative research methods (interviews, reflective journals, and focus groups) indicate that these programmes can improve the confidence, communication, teamwork, leadership, and behaviour of participants.

In summary, research suggests that a variety of life skills interventions are already teaching young people life skills through sport. However, there are a couple of limitations to be considered when reviewing such interventions. One limitation is that we lack a clear and coherent theoretical conception of these programmes, an understanding of how and why they may work, and how such programmes should be implemented accordingly (Hartmann, 2003). This seems to be a clear case of applied practice moving ahead of academic research. A second limitation is the difficulty in measuring the effectiveness of these interventions and the area of positive youth development through sport in general. Such measurement issues will be discussed in the paragraphs which follow.

Measurement Issues

A major issue for positive youth development is that researchers have failed to provide reliable and valid measures to assess the positive outcomes of youth development programmes. This was highlighted 16 years ago when Catalano et al. (1999) identified that a stumbling block for the youth development field was the lack of accepted measures for assessing positive youth development. Since this stumbling block was identified, some measures have been developed to assess positive youth development.

One of the earliest and most prominent measures of positive youth development was the YES 2.0 (Hansen & Larson, 2005). This 70-item survey measures the following developmental experiences in extracurricular activities: identity experiences, initiative experiences, basic skills, interpersonal relationships, teamwork and social skills, adult networks and social capital, and negative experiences. These developmental experiences or life skills were chosen because ‘focus group’ research indicated that they were the key growth experiences that participants had in extracurricular activities (Dworkin et al., 2003).

As highlighted on page 27–28, several studies have used the YES 2.0 to assess life skills development through sport (e.g., Gould et al., 2012; Strachan et al., 2009; Taylor & Bruner, 2012). These studies provided some support for the internal consistency reliability of the survey. However, two of these studies found that the emotional regulation subscale displayed poor internal consistency reliability (Gould et al., 2012; Strachan et al., 2009) and none of the three studies tested the factor structure of the YES 2.0.

The lack of support for the YES 2.0 meant that MacDonald et al. (2012) revised the scale for youth sport. Using EFA, these researchers developed the 37-item YES-S which measures personal and social skills, cognitive skills, goal setting, and initiative. Since its development, the four subscales of the survey have displayed adequate internal consistency reliability in two large youth sport samples (MacDonald et al., 2011; Vella et al., 2011). Nonetheless, neither of these studies assessed the factor structure of the survey via CFA. As a result, only partial information exists to support the validity of the YES-S and future research is required to assess its factor structure. Additionally, if one looks at all the life skills young people are purported to learn through sport (see Johnston et al., 2013 for a review), it is obvious that the YES-S only covers a few of these life skills. Some important life skills which lack measures include leadership, communication, time management, and emotional skills.

The comprehensive and thorough measurement of life skills is important for a number of reasons. Gould and Carson (2008) suggested that new life skills measures will help programme organisers, athletic directors, and coaches assess the effectiveness of their efforts to teach life skills. Furthermore, Sandford et al. (2006) proposed that given the amount of public and private funding invested in physical activity and sports programmes,

it is essential for credible monitoring and evaluation of these programmes to take place. Others go further by suggesting that measures of positive youth development should be incorporated into national statistics systems (MacDonald & Valdivieso, 2001). In sum, it is important that appropriate measures of life skills development be developed and made available (Gould & Carson, 2008).

Along with developing measures to assess life skills development, it is important for researchers to assess how young people learn life skills through sport (Holt & Jones, 2008). In particular, research is needed to investigate the factors (e.g., the environment, peer relations, and coaches) which may promote life skills development through sport. Given the centrality and importance of coaches within youth sport, the coach is a good person to start with when investigating life skills development through sport.

The Coach's Role in Life Skills Development

The significance of the coach in youth sport is highlighted by the fact that the coaching role is one of the most explored areas in sport psychology (Fraser-Thomas, Côté, & Deakin, 2008). Whether an athlete reaps the developmental benefits of sports participation depends a great deal on the coach (Bailey, 2008). Previous research has highlighted the importance of the coach in facilitating positive sports experiences (Smith & Smoll, 1996). According to Smith and Smoll (1996), coaches interpersonal behaviours, the values and attitudes they transmit, and the goal priorities they establish, all affect the impact that sport has on young people.

Both researchers and coaches seem to acknowledge that the personal development of participants is a key aspect of coaching. For instance, Jones, Armour, and Potrac (2004) suggest that quality coaches are concerned with both the sporting and personal

development of athletes. Historically, this was not always the case, with Smoll and Smith (1989) highlighting in the 80s that some coaches view their role in terms of needing to win and acting punitively. More recently, there has been a growing appreciation amongst coaches that part of their role is developing young people. Research by Vella and colleagues (2011) established that coaches do view themselves as responsible for promoting positive youth development through sport. These coaches viewed the life skills of goal setting, communication, leadership, and interpersonal skills as useful tools which can benefit sports performance and contribute to positive human functioning. Coaches accepting that they are responsible for positive youth development is important, as coaching life skills through sport has been identified as a major avenue of positive youth development (Gould, Collins, Lauer, & Chung, 2007; Gould & Carson, 2008).

A great deal of research would point to the coaches' influence on positive youth development through sport. To begin with, the coach is said to be responsible for the climate that exists in a sports team or group (Pensgaard & Roberts, 2002). Several features of the climate have been proposed to influence youth development. The National Research Council Institute of Medicine (2002) suggested that eight features of the climate influence youth development: (1) physical and psychological safety, (2) appropriate structure, (3) supportive relationships, (4) opportunities to belong, (5) positive social norms, (6) support for efficacy and being made to feel important, (7) opportunities for skill building, and (8) integration of school, family, and community efforts. Roth and Brooks-Gunn (2003) suggested that the goals, atmosphere, and activities of a programme help promote positive outcomes. Lastly, Hellison and Walsh (2002) suggested that fun/enjoyment, interaction with a caring adult, and a sense of belonging are three aspects of the climate that enhance

youth development. Within sport, a number of qualitative studies have highlighted the coach's role in participants' developing their life skills.

Qualitative Research on the Coaches' Role

One study conducted by Gould and colleagues (2007) interviewed 10 outstanding American football coaches to elicit their views on coaching and youth development. These coaches highlighted numerous ways participants learn life skills through American football. To begin with, they believed that the process of striving for excellence led to the development of life skills such as discipline, work ethic, and emotional control. The coaches also suggested a number of strategies to promote life skills development, including: working with players (e.g., serving as a positive role model and treating players as young adults), dealing with others (e.g., treating officials with respect and listening to assistant coaches), performance enhancement strategies (e.g., helping players set and achieve goals), and teaching life skills directly (e.g., speaking to players about how life skills can transfer). These findings suggest that sport teaches life skills both indirectly and directly to participants.

A study by Strachan et al. (2011) investigated how Canadian youth sport coaches teach life skills to participants. After interviewing five coaches, these researchers proposed that coaches can provide athletes with opportunities to develop their life skills. These opportunities include the chance to mentor younger athletes, set up training activities, lead the warm-up, and ask questions of the coach. Presumably such experiences would allow participants to learn important communication, leadership, social, and problem solving skills. For example, perhaps mentoring younger athletes requires both communication and leadership skills.

Other qualitative studies have focused on sports participants' experiences. After interviewing 22 Canadian youth swimmers, Fraser-Thomas and Côté (2009) proposed that coaches could promote life skills development in a number of practical ways. These included showing belief in athletes, teaching and guiding the goal setting process, modelling a strong work ethic, designating 'homework time' on road trips to promote time management skills, demonstrating good communication skills, and providing opportunities for the development of independence.

A later study which focused on both sports participants and coaches was conducted by Camiré, Trudel, and Forneris (2012). These researchers assessed Canadian high school coaches' philosophies and strategies for teaching life skills by interviewing 9 coaches and 16 student-athletes. Results suggested that coaches use a variety of methods to teach life skills. Some student-athletes proposed that their coaches provide opportunities to exhibit life skills (e.g., the chance to mentor younger athletes) and others mentioned that coaches frequently discuss and model the skills they expect their athletes to exhibit (e.g., good leadership skills). Coaches themselves stressed the importance of recognising and taking advantage of teachable moments to impart life skills. For example, the point in a game when a team goes a goal down could be viewed as an opportunity for players to show leadership skills. Finally, coaches mentioned that they encourage transfer of life skills from sport to non-sport settings by asking students to reflect on how they could transfer a life skill.

Using a case study approach, Camiré, Trudel, and Bernard (2013) investigated a Canadian high school ice hockey programme designed to teach life skills. These researchers interviewed and observed athletes, coaches, parents, the school principal, and

the programme director over one academic year. Findings suggested that developmental classes and teachable moments were the primary methods used to teach life skills. Developmental classes involved teaching students about values (e.g., honesty, respect, and fairness), goal setting, and requiring players to perform volunteer work. Teachable moments involved taking advantage of opportunities that occurred within training to teach life skills. For example, slacking during training was used as an opportunity to teach athletes about the importance of effort and perseverance.

Quantitative Research on the Coaches' Role

Research studies have also used quantitative methods to investigate how coaches can promote life skills development. To begin with, Gould and colleagues conducted a series of studies using the YES 2.0 to assess life skills development in American athletes. The first study involved 200 former high school athletes and assessed general and specific coaching behaviours that were proposed to facilitate life skills development (Gould & Carson, 2010). This study found that the coaching behaviours of positive rapport, competition strategies, goal setting, and talking about sport lessons were positively associated with athletes' development of emotional regulation, cognitive, and feedback skills. In a second study, Gould and Carson (2011) surveyed 297 high schools students about their sporting involvement. Consistent with their previous findings, an environment characterised by positive rapport was positively related to the development of student-athletes' life skills. Results also revealed that coaches who were perceived as teaching athletes about mental preparation, competitive strategies, goal setting, and emphasised hard work were more likely to have athletes who learned about emotional regulation, goal setting, and effort. In a third study, Gould et al. (2012) investigated how a caring and

mastery-oriented coaching climate affects life skills development. With a sample of 239 youth sport participants, these researchers found that the more coaches created a mastery-oriented and caring climate, the more participants developed their personal and social skills, cognitive skill, goal setting, and initiative. In contrast, an ego-oriented climate was negatively related to the development of these life skills.

Whilst some studies have used the YES 2.0 to assess life skills development, other studies have chosen to use the YES-S when conducting their research. Using 510 Canadian youth sport participants, MacDonald and colleagues (2011) assessed participants' life skills development through sport, the coaching climate (i.e., task-oriented versus ego-oriented), and young peoples' source of enjoyment from sport. These researchers concluded that a task climate, affiliation with peers, self-referenced competency, and effort expenditure were the most important predictors for the development of personal and social skills, cognitive skills, goal setting, and initiative. They also found that the strongest predictor of personal and social skills was affiliation with peers, and self-referenced competency was the best predictor of goal setting. Another study that used the YES-S was conducted by Vella et al. (2013) with a sample of 455 Australian soccer players. These researchers found that coach transformational leadership behaviours and the coach-athlete relationship were positively related to players' life skills development. Being an appropriate role model and providing players with intellectual stimulation were key leadership behaviours which were positively related to the development of personal and social skills, cognitive skills, goal setting, and initiative.

In summary, it is clear that the coach is an important person within the context of youth sport. Specifically, the coach can help create a climate where young people develop

their life skills. Both qualitative and quantitative studies have highlighted some aspects of the climate that facilitate young peoples' development of life skills through sport. Another aspect of the climate which may promote participants' life skills development is coach autonomy support.

Coach Autonomy Support

Autonomy is part of self-determination theory (Ryan & Deci, 2000) and concerns a sense of engaging in actions with a true sense of volition and in accordance with one's personal values and interests (Black & Deci, 2000). When a coach provides autonomy support, he/she considers the athlete's feelings, provides opportunities for decision making and choice, and reinforces an athlete's belief that they are responsible for their own actions (Quested & Duda, 2009). Mallett (2005) has described seven key behaviours of an autonomy supportive coach: (1) provide choice to athletes, (2) give a rationale for tasks, (3) acknowledge the feelings and perspective of athletes, (4) provide athletes with opportunities for initiative taking and independent work, (5) give competence feedback that does not direct behaviour, (6) avoid coaching behaviours that seek to control athletes, and (7) reduce the perception of ego involvement within the environment.

A number of studies in sport have highlighted that an autonomy supportive climate is associated with participants' psychological well-being. To begin with, Gagné, Ryan, and Bargmann (2003) conducted a four-week study with 33 female American gymnasts which focused on gymnasts' perceptions of how their coaches supported their need for autonomy during practice. Findings from this study indicated that satisfaction of athlete's need for autonomy was positively related to their self-esteem, positive affect, and subjective vitality. Focusing on youth soccer and cricket, Reinboth, Duda, and Ntoumanis (2004) conducted a

cross-sectional study with 265 British participants. A key finding from this study was that coach autonomy support was positively related to players' subjective vitality. A later study by Smith et al. (2007) revealed that coach autonomy support was positively related to positive affect and life satisfaction in British adult sports participants. Investigating autonomy support within physical education, Standage and Gillison (2007) explored the effect of teacher autonomy support on physical education students' psychological well-being. Using a sample of 371 British high school students, these researchers found that teacher autonomy support was positively related to students' self-esteem.

The above research provides substantial evidence that autonomy support is positively related to a range of psychological well-being indicators. There is less research supporting the contention that autonomy support is related to the development of life skills. This is somewhat surprising given that self-determination theory is foremost a theory of human development (Ryan & Deci, 2000). Nonetheless, some studies have highlighted that certain aspects of autonomy support are important for positive youth development. After interviewing 8 teachers and 59 children in Canada, Holt et al. (2012) suggested that the perception of choice in an activity was an important facilitator of positive youth development. Perhaps providing participants with choice encourages their engagement with the activity and this heightened engagement helps promote their development. Another study which dealt with autonomy support involved a review of 60 American youth development programmes (McLaughlin et al., 1994). In their conclusion, these authors suggested that empowerment, independence, and a recognised voice are key attributes of a programme that promotes youth development. Again, these are all aspects of an autonomy supportive environment.

In summary, research from sport, physical education and youth development programmes supports the contention that coach autonomy support should be positively related to life skills development and psychological well-being in youth sport participants. Several theorists have also argued that the provision of autonomy support leads to positive developmental outcomes in young people (e.g., Coakley, 2002; Ryan & Deci, 2000). Nonetheless, few theories of youth development look to explain the interaction between the coaching climate, life skills development, and psychological well-being in young people. This raises the question of why and how do positive outcomes occur for young people who participate in sport?

Why Such Positive Outcomes – Benson and Saito's Framework

One explanation for the positive outcomes of sport comes from Benson and Saito's (2001) conceptual framework for youth development theory and research. This framework involves four sequential components: (1) the contexts informing access to inputs, (2) the mobilisation of youth development inputs, (3) the building of young peoples' developmental strengths, and (4) the promotion of health and well-being outcomes. The first component of the framework is the contexts informing access to inputs which includes economics, social policy, and race/ethnicity. Such contexts are related to whether young people can access the next component of the model or not. For example, it is a sad fact that some parents cannot afford for their children to participate in sports which may promote their development. The second component of the model is the mobilisation of youth development inputs which involves programmes (e.g., in school or after school), organisations (e.g., clubs, teams, and recreation centres), socialising systems (e.g., family, neighbourhood, and schools), and the community (e.g., public places and community

norms). These are the settings where positive youth development can occur and are thus related to the third component of the model – the building of young peoples' developmental strengths. Some of the key developmental strengths highlighted by Benson and Saito (2001) for illustrative purposes include mastery, belonging, engagement, and competence. The building of such developmental strengths is related to the final component of the model – the promotion of health and well-being outcomes. Examples of such outcomes include good physical health and psychological well-being.

Benson and Saito (2001) proposed this conceptual framework for youth development theory and research in order to "guide the systematic inquiry necessary to guide, shape, refine, and fuel the [positive youth development] approach" (p. 143). Using this framework, they identified key areas where further research was required. One area for future research was to establish the developmental resources within each input (i.e., the relationships, norms, and climate). An example of a developmental resource in sport is the provision of an autonomy supportive climate necessary for young peoples' development (Ryan & Deci, 2000). A second area for future research was to conceptualise the arena of developmental strengths. Within youth sport, developmental strengths have predominantly been conceptualised in terms of the life skills young people develop through sport (e.g., teamwork, social skills, and leadership). As discussed from page 23–34, a great deal of research has reported on the various life skills young people learn through sport. A third area for future research is clarifying youth development outcomes. Examples of key outcomes which have been investigated extensively within sport include the psychological well-being indicators of self-esteem, positive affect, and satisfaction with life (Gagné et al., 2003; Smith et al., 2007). As important as identifying, conceptualising or clarifying the

components of Benson and Saito's (2001) framework is establishing the links between components. This leads onto the fourth area for future research – the importance of establishing the links between youth development inputs (e.g., coach autonomy support), the building of developmental strengths (e.g., life skills), and well-being outcomes (e.g., psychological well-being). This area for future research will be discussed in greater detail in the paragraphs which follow.

Some research has investigated the relationships between youth development inputs and the building of developmental strengths in young people. For example, earlier in the thesis (p. 38–39), I discussed various studies which highlighted that a mastery-oriented and caring climate, coach transformational leadership behaviours, the coach-athlete relationship, and affiliation with peers were all positively associated with life skills development in youth sport participants (Gould et al., 2012; MacDonald et al., 2011; Vella et al., 2013). Focusing on autonomy support, research from mainstream psychology supports the idea that an autonomy supportive climate should be related to life skills development in young people. Studies have shown that autonomy support is related to adolescents' communication and collaboration skills (Sproule et al., 2013), social skills (Engels, Deković, & Meeus, 2002), transformational leadership (Kudo, Longhofer, & Floersch, 2012), and problem solving (Smither & Zhu, 2011). When proposing their conceptual framework for life skills interventions, Hodge, Danish, and Martin (2012) also suggested that an autonomy-supportive climate was an important part of teaching life skills. Within sport, recent observational and interview-based research with 12 American youth sport coaches suggested that more effective coaches use autonomy support as a way of teaching participants life skills (Flett, Gould, Griffes, & Lauer, 2013).

To the best of the current author's knowledge, no studies within youth sport have examined the links between the development of life skills and well-being outcomes. This is surprising given that developmental systems theories suggest that development in one area should positively affect development in other areas of a young person's life (Lerner, 2005). In this respect, Theokas et al. (2008) proposed that the ability of life skills to impact other aspects of a person's life is a crucial step in achieving the maximum outcome from sport. Despite no evidence being available within youth sport, there is evidence from other domains suggesting that life skills development ought to be related to psychological well-being. For example, studies with university students and adult populations have shown that goal setting (Diseth, Danielsen, & Samdal, 2012; Sheldon & Elliot, 1999), time management (Bond & Feather, 1988), social skills (Riggio, Throckmorton, & DePaola, 1990; Segrin & Taylor, 2007), communication skills (McCroskey & Richmond, 1990), leadership (Bass, 1990), emotional skills (Bastian, Burns, & Nettelbeck, 2005; Brackett & Mayer, 2003; Kong & Zhao, 2013), and problem solving (Ayres & Malouff, 2007) are positively related to the psychological well-being indicators of self-esteem, positive affect, and life satisfaction.

Many researchers in sport also suggest that life skills learned through sport do effect other aspects of young peoples' lives. Papacharisis et al. (2005) proposed that the following skills are transferrable from sport to life: performing under pressure, problem solving, meeting deadlines or challenges, goal setting, communication, the ability to handle success and failure, teamwork, and the ability to receive feedback and benefit from it. However, what do youth sports participants and coaches say about the transfer of life skills? After interviewing 12 members of a Canadian high school soccer team, Holt et al.

(2008) indicated that teamwork and leadership were two skills which participants felt transferred to other life domains. A study with 20 Canadian athletes identified that teamwork skills could be applied to academic work and social skills could be applied to various life domains (Camiré et al., 2009). Other studies have focused on coaches' perspectives regarding life skills transfer. A study with 10 American football coaches found that these coaches believed that life skills such as persistence could benefit other aspects of young peoples' lives (Gould et al., 2007). Finally, a study which involved 9 coaches and 16 athletes from Canada concluded that life skills learned through sport can also be useful in the workforce or education (Camiré et al., 2012).

Specific psychological theories also deal with the idea that competencies or skills learned through sport can help participants' develop their self-esteem. To begin with, developmental theory postulates that young people strive to build various competencies during adolescence and such competencies impact young peoples' self-esteem (Erikson, 1963; Harter, 1993). With specific emphasis on sport, Sonstroem's (1997a, 1997b) skill development hypothesis suggests that the skills young people learn through sport enhance their self-esteem. Supporting such a hypothesis, a study by Weiss, Ebbeck, and Horn (1997) surveyed 183 children and adolescents who participated in sport and found that participants' perceived physical competence for their sport was positively related to their general self-esteem. Based on these theories, along with studies involving student and adult populations, sport studies on the transfer of life skills, and Benson and Saito's (2001) framework for youth development, one could contend that the learning of life skills within sport should be related to psychological well-being outcomes such as self-esteem, positive affect, and satisfaction with life.

Brief Summary

From reviewing the literature, one can see that sport is an ideal context to promote positive youth development. Coaches, parents, participants, former participants, and wider society all view sport as a setting for promoting an array of positive outcomes. Those involved in researching positive youth development through sport have mainly focused on two specific outcomes: life skills development and psychological well-being (e.g., Gould & Carson, 2008; Gagné et al., 2003). Others have suggested that the coaching climate determines whether young people gain such positive outcomes (Bailey, 2008). A framework that includes the coaching climate, participants' life skills development, and psychological well-being is Benson and Saito's (2001) conceptual framework for youth development theory and research. This framework suggests that the coaching climate is related to life skills development; which, in turn, is related to participants' psychological well-being. Using this framework, the present thesis investigated the processes by which positive youth development occurs within youth sport.

Programme of Research

Based on Benson and Saito's (2001) framework for youth development, several research questions were identified. To begin with, this programme of research investigated whether Scottish youth sport participants were learning life skills through sport. Given that the majority of research has been conducted in the U.S. and Canada, there were no guarantees that Scottish youth sport participants would be learning life skills through sport. Second, this thesis investigated whether coach autonomy support was related to life skills development within youth sport participants. This research question was important as it would allow researchers to better inform coaches on how they can promote life skills

development. Third, this programme of research assessed whether the life skills developed through sport were related to participants' psychological well-being. An answer to this research question would help explain whether the life skills developed through sport transfer to other areas of young peoples' lives. Fourth, this thesis investigated whether life skills development mediated the relationship between coach autonomy support and participants' psychological well-being. In doing so, this was the first study to formally test Benson and Saito's (2001) framework for youth development. Testing this framework would inform researchers and coaches about the mechanisms by which positive youth development occurs within sport. Lastly, this programme of research examined the validity of the measure used to assess life skills development through sport – namely, the YES-S (MacDonald et al., 2012). Based on the results obtained when investigating the validity of the YES-S, a major part of this thesis involved developing and validating a scale which could accurately assess eight life skills young people learn through sport.

Overview of Phase 1

Phase 1 of this programme of research involved testing Benson and Saito's (2001) framework for youth development. Chapter 3 describes Study 1 which tested Benson and Saito's (2001) framework with a sample of 202 youth sport participants. This study explored the relationships between the coaching climate, young peoples' life skills development (personal and social skills, cognitive skills, goal setting, and initiative) and psychological well-being (self-esteem, positive affect, and satisfaction with life). Additionally, the factor structure of the YES-S was assessed via CFA.

Chapter 3 – Testing Benson and Saito's (2001) Conceptual Framework in Sport

Study 1 – Introduction

Positive youth development refers to "strength-based and asset-building approaches to developmental research in which young people are viewed as resources to be developed" (Holt et al., 2012, p. 98). Youth sport is acknowledged as an ideal setting to promote positive youth development (Holt & Sehn, 2008). Within Scotland, approximately 712,000 young people between 8–24 years take part in sport on a weekly basis (Sports Scotland, 2008). It is not just these large participation numbers that make sport an ideal setting for youth development. It is the interactive, emotional, and socially involved nature of sports, along with the heightened engagement it invokes in young people, which provide opportunities for development (Danish et al., 2004; Fraser-Thomas et al., 2005; Gould & Carson, 2010; Hellison et al., 2008).

As demonstrated in Chapter 2, young people are developing a variety of life skills through sport including: teamwork, social skills, motivation (Holt & Sehn, 2008), goal setting, initiative (Camiré et al., 2009), communication, leadership (Dworkin et al., 2003), and problem solving and decision making (Petitpas et al., 2004). However, little is known about either the antecedents or consequences of life skills development. A framework which focuses on the antecedents and consequences of life skills development is Benson and Saito's (2001) framework for youth development. This framework allows researchers to investigate how the coaching climate can affect life skills development in young people and whether these life skills are related to other well-being outcomes. This is important as positive youth development incorporates these three aspects: the developmental climate (Catalano et al., 2002), life skills development (Jones et al., 2011), and participants' well-being (King et al., 2005). Previous studies in sport have not investigated how these aspects

of positive youth development interact. Thus, the purpose of this study was to investigate both the antecedents and consequences of life skills development within youth sport.

The present study focused on the following life skills: personal and social skills, cognitive skills, goal setting, and initiative. Learning these particular skills is important because they are related to a variety of positive outcomes. Personal skills such as controlling one's emotions are positively related to adolescents' psychological well-being and academic achievement (Humphrey et al., 2011). Social skills are positively associated with young peoples' relationship development, social acceptance (Matson et al., 2010), and self-esteem (Riggio et al., 1990). Cognitive skills such as problem solving are positively related to outcomes such as greater academic performance (Elliot, Godshall, Shrout, & Witty, 1990) and physical health (Elliott & Marmarosh, 1994). Goal setting is an important skill which young people can use to improve their performance in school (Zimmerman, Bandura, & Martinez-Pons, 1992), the workplace (Locke & Latham, 1984), and sport/exercise (Burton, Naylor, & Holliday, 2001). Lastly, initiative is an essential skill for young people to develop as it is a core component of other skills such as creativity, leadership, altruism, and civic virtue (Larson, 2000). Despite the importance of these life skills, research is needed to explore how sport can develop these life skills in participants.

Antecedents of Life Skills Development

Given the central role coaches play in sport, the coaching climate is one factor that influences young peoples' sports experiences (Smith & Smoll, 1996). The coaching climate refers to the psychosocial environment the coach creates for their athletes. Recent studies have shown that certain aspects of the coaching climate are related to the development of life skills. In a study with youth sport participants, Gould et al. (2012)

found that the more coaches created a mastery-oriented and caring climate, the more participants learned about personal and social skills, cognitive skills, goal setting, and initiative. Another study by Vella et al. (2013) found that coach transformational leadership and the quality of the coach-athlete relationship were positively related to the development of these life skills in youth soccer players. Building on such research, this is the first study to investigate the relationships between coach autonomy support and participants' life skills development in youth sport.

Autonomy support is part of self-determination theory and refers to the willingness of the coach to provide a rationale for tasks, inquire about and acknowledge athletes' feelings, provide choice in training, allow athletes to take the initiative and work independently, and create a non-controlling environment (Mageau & Vallerand, 2003). Self-determination theory is an ideal theory to draw upon when researching youth development, as it explores the environmental factors that lead to both optimal development and wellness (Ryan & Deci, 2000). The present study only focused on the environment (i.e., coach autonomy support) as the primary purpose of the study was to test Benson and Saito's (2001) framework for youth development. According to self-determination theory, activity involvement has positive effects when combined with autonomy support. Within physical education, Standage and Gillison (2007) found that teacher autonomy support was positively related to students' self-esteem. Another study in sport found that coach autonomy support was positively related to positive affect and life satisfaction in adult athletes (Smith et al., 2007). In line with Benson and Saito's (2001) framework, the current study investigated whether coach autonomy support was related to participants' psychological well-being through life skills development.

When investigating this mediation model, it was important to explore why coach autonomy support would be related to the development of personal and social skills, cognitive skills, goal setting, and initiative. To begin with, research with youth sport coaches has suggested that fostering an autonomy-supportive environment is one way effective coaches try to promote life skills development in participants (Flett et al., 2013). In their framework for life skills interventions, Hodge et al. (2012) proposed that autonomy support and the satisfaction of the needs for autonomy, competence, and relatedness play an important role in life skills development. Self-determination theory suggests that autonomy support leads to the satisfaction of the needs for autonomy, competence, and relatedness; which, in turn, leads to optimal development and well-being (Ryan & Deci, 2001). These causal mechanisms provide a rationale for why coach autonomy support would be related to participants' life skills development. By displaying autonomy-supportive coaching behaviors such as listening to their athletes, accepting their athletes, and allowing athletes to share their feelings, it is likely that coaches will create a climate where athletes' need for relatedness is satisfied and they develop their personal and social skills. In addition, a coach who allows athletes to ask questions, provides choices, and encourages initiative, will satisfy athletes' need for autonomy and ensure athletes develop their cognitive skills and initiative. Finally, a coach who provides non-controlling competence feedback, ensures an athlete understands the goals of their sport involvement, and displays trust in their athlete, will satisfy their need for competence/autonomy and encourage them to develop their goal setting skills.

Consequences of Life Skills Development

In their framework for youth development, Benson and Saito (2001) suggested that developing young peoples' life skills will also promote their well-being. The present study focused on young peoples' psychological well-being. Although, there is no agreed upon definition of psychological well-being, most definitions have emphasized positive psychological states as opposed to the absence of negative cognitions and feelings (Reinboth & Duda, 2006). It is generally accepted that psychological well-being is best represented by multiple indicators (Wilson, Longley, Muon, Rodgers, & Murray, 2006). Therefore, indicators of self-esteem, positive affect, and satisfaction with life were used in this study. Previous studies have investigated psychological well-being using these indicators (e.g., Adie, Ntoumanis, & Duda, 2010; Smith et al., 2007).

In this study, self-esteem was defined as "a person's evaluation of, or attitude toward, him- or herself" (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, p. 435). Positive affect "represents the extent to which an individual experiences pleasurable engagement with the environment" (Crawford & Henry, 2004, p. 246). Finally, satisfaction with life is "a global assessment of a person's quality of life according to his/her chosen criteria" (Shin & Johnson, 1978, p. 478). Numerous studies have highlighted the importance of self-esteem, positive affect, and satisfaction with life for enabling young people to lead healthy and happy lives (e.g., Arrindell, Meeuwesen, & Huyse, 1991; Lyubomirsky, King, & Diener, 2005).

The Present Study

The general purpose of this study was to investigate the relationships between coach autonomy support, participants' life skills development within sport, and

psychological well-being. The first aim of this study was to assess whether coach autonomy support was positively related to participants' developing their personal and social skills, cognitive skills, goal setting, and initiative. In accordance with previous youth sport studies (e.g., Flett et al., 2013), it was expected that coach autonomy support would be positively related to all four life skills. The second aim was to assess whether each of the life skills were positively related to participants' psychological well-being. In this regard, it was expected that the four life skills would be positively related to participants' self-esteem, positive affect, and satisfaction with life. The last aim of this study was to investigate whether life skills development mediates the relationships between coach autonomy support and participants' psychological well-being. Based on Benson and Saito's (2001) framework for youth development, it was expected that the development of the four life skills would mediate the relationships between coach autonomy support and participants' psychological well-being.

Method

Participants

A sample of 202 Scottish youth sport participants between the ages of 10–19 years took part in this study (M_{age} = 13.4, *SD* = 1.8). The sample comprised more male (*n* = 127) than female participants (*n* = 75). A total of 13 sports were represented in the sample. Swimming (31.2%) was the most represented sport, followed by tennis (17.8%), basketball (10.9%), track and field (9.9%), rugby (8.9%), and soccer (7.4%). Cricket, badminton, field hockey, gymnastics, Olympic handball, curling, and ice hockey were all represented at frequencies below 5%. The participants played sport recreationally for an average of 4.7 hours per week (*SD* = 3.7), with an average of 5.5 years (*SD* = 2.8) playing

experience. This sample was a good representation of youth sport participants as it included a variety of sports across an age range which is representative of youth (Papalia et al., 2006).

Procedures

Following approval from the University of Stirling's ethics committee, participants were recruited from Scottish sports clubs. Prior to completing the survey (see Appendix A), parental consent was obtained from all participants. All participants completed the online survey at home. With regard to online data collection, research points to the equivalence of online and paper-and-pencil surveys. For instance, Knapp and Kirk (2003) found no significant difference between paper-and-pencil and online surveys assessing honesty, prejudice and illegal behaviour within a sample of 352 undergraduate students. Similarly, using a sample of 150 university students, Campos, Zucoloto, Bonafé, Jordani, and Maroco (2011) found that the factor structure of three commonly used burnout inventories was invariant across paper-and-pencil and online surveys. Within sport, Lonsdale, Hodge, and Rose (2006) obtained similar results for perceptions of athlete burnout when they administered surveys online or in paper-and-pencil format. A number of researchers also highlight that online data collection has a number of advantages including: easier access to larger geographical populations, lower response time, reduced cost, flexibility and control over the survey format, perceived anonymity, and ease of data entry (Granello & Wheaton, 2004; Tourangeau, 2004; Ward, Clark, Zabriskle, & Morris, 2014). This being said, researchers must be aware of the limitations of online surveys which include: questions about the representativeness of the sample, lower response rates, unknown effects on scale validity or psychometric properties, and technical difficulties

(Granello & Wheaton, 2004). Given the evidence for the equivalence of online data collection within sport (Lonsdale et al., 2006), the present study used an online survey to collect data from sports clubs throughout Scotland. In this study, participants answered questions regarding their coach's autonomy support, the development of life skills within their sport, and their psychological well-being. To ensure anonymity and facilitate honest responses, participants were not asked for their name or squad number.

Measures

Coach autonomy support. Perceptions of coach autonomy support were assessed with the Sport Climate Questionnaire (Deci, 2001). This 15-item questionnaire allows athletes to rate their coach in terms of autonomy support (e.g., "I feel that my coach provides me with choices and options" and "My coach encourages me to ask questions"). Each item is rated on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Scores for this scale are calculated by averaging the individual item scores. Scores can range from 1 to 7, with higher scores representing a greater level of perceived autonomy support. This scale has previously displayed adequate reliability and discriminant validity with 11–16 year old youth sport participants (Jõesaar, Hein, & Hagger, 2012). In the current sample, the scale displayed a Cronbach's alpha coefficient of .93, which is above the .70 deemed acceptable for the psychological domain (Nunnally & Bernstein, 1994).

Life skills development. The development of life skills was measured using the positive subscales of the Youth Experiences Survey for Sport (YES-S; MacDonald et al., 2012). These subscales assess personal and social skills (14 items; e.g., "Learned that working together requires some compromising"), cognitive skills (5 items; e.g., "Improved

skills for finding information"), goal setting (4 items; e.g., "Learned to find ways to reach my goals"), and initiative (4 items; e.g., "Learned to push myself"). Each item is rated on a 4-point scale ranging from 1 (*Not at all*) to 4 (*Yes, definitely*). Scores for each subscale are calculated by averaging the individual item scores. Scores can range from 1 to 4, with higher scores representing a greater level of life skills development. The factor structure and reliability of the YES-S has previously been supported with 9–19 year old sports participants (MacDonald et al., 2012).

As the YES-S was a recently developed measure, CFAs were conducted on each of the subscales using AMOS (Arbuckle, 2010). The following fit indices were used to assess model fit: chi-square (χ^2); chi-square statistic divided by degrees of freedom (*df*); Root Mean Square Error of Approximation (RMSEA; Stieger & Lind, 1980); Comparative Fit Index (CFI; Bentler, 1990); and the Non-Normed Fit Index (NNFI; Tucker & Lewis, 1973). These fit indices were selected as they represented both absolute fit indices (i.e., chi-square, χ^2 divided by *df*, and RMSEA) and incremental fit indices (i.e., CFI and NNFI). Furthermore, these fit indices tend to perform well in relation to model misspecification and lack dependence on sample size (Jackson, Gillaspy, & Purc-Stephenson, 2009). According to Biddle, Markland, Gilbourne, Chatzisarantis, and Sparkes (2001), the principal means of assessing a good fit is a non-significant chi-square ($p > .05$). However, with a large sample size ($N > 200$), as was the case in the current study, models rarely fit via the chi-square test statistic (Barrett, 2007). Consequently, it has been suggested that the chi-square value be used more subjectively as an index of fit rather than a test statistic, with large chi-square values relative to *df* indicating a poor fit, and small values indicating a good fit (Jöreskog & Sörbom, 2003). Experts have suggested that the chi-square value

relative to *df* ratio should be 3:1 or lower (Kline, 2000; Tabachnick & Fidell, 2007). For assessing the RMSEA, CFI, and NNFI values, Hu and Bentler's (1999) criteria were used. Specifically, a RMSEA of equal or less than .06 was taken to indicate a close fit, less than .08 a reasonable fit, and greater than .10 a poor fit. For the CFIs and NNFIs, >.90 indicates adequate fit and >.95 indicates excellent fit (Hu & Bentler, 1999). In summary, a combination of the chi-square test statistic, chi-square statistic divided by *df* ratio, and Hu and Bentler's (1999) criteria were used to assess model fit. Several authors have recommended this approach of examining and reporting a range of fit indices to achieve a thorough evaluation of fit (Hu & Bentler, 1999; Jöreskog, 1993). The cognitive skills, χ^2 (2) = 8.36, p >.05; χ^2/df = 4.18, RMSEA = 0.06, CFI = 0.99, NNFI = 0.98; goal setting, χ^2 (2) = 5.63, p >.05, χ^2/df = 2.82, RMSEA = 0.10, CFI = 0.98, NNFI = 0.95; and initiative χ^2 (2) = 4.15, p >.05, χ^2/df = 2.08, RMSEA = 0.08, CFI = 0.99, NNFI = 0.96, subscales all displayed an adequate fit. In contrast, the personal and social skills subscale displayed a poor fit, χ^2 (77) = 230.12, p <.001, χ^2/df = 2.99, RMSEA = 0.10, CFI = 0.74, NNFI = 0.69. High modification indices indicated problems with four items. However, given the number of items involved (i.e., 4 of 14 items) it was decided to use all 14 items when conducting all further analyses. For the current sample, all four subscales demonstrated acceptable internal consistency reliability with Cronbach's alpha coefficients ranging from .76–.83.

Self-esteem. Self-esteem was measured using the general-self subscale of the Self-Description Questionnaire II (Marsh, Parker, & Barnes, 1985). Five items of the subscale are phrased positively (e.g., "Overall, I have a lot to be proud of") and five items are written to reflect low self-esteem (e.g., "I feel that my life is not very useful"). Participants responded on a 7-point scale ranging from 1 (*False*) to 7 (*True*). After reverse scoring the

negatively worded items, scores are calculated by averaging the individual item scores. Scores can range from 1 to 7, with higher scores indicating a greater level of self-esteem. The reliability of this scale has been supported with 11–18 year old youth sport participants (Adie et al., 2010). The Cronbach's alpha coefficient was .89 for the current sample.

Positive affect. Positive affect was assessed using the positive subscale of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). This 10-item scale asks participant to rate how a word (e.g., "alert" or "excited") describes their feelings "in general". The participant rates the extent to which they feel that way on a 5-point scale ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). Scores for this scale are calculated by averaging the individual item scores. Scores can range from 1 to 5, with higher scores indicating greater levels of positive affect. This scale has displayed adequate reliability and model fit with 10–17 year old youth sport participants (Crocker, 1997). The current sample displayed a Cronbach's alpha coefficient of .92.

Satisfaction with life. Satisfaction with life was measured using the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). This 5-item scale asks participants to indicate their agreement with certain statements (e.g., "In most ways my life is close to my ideal"). Participants respond on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Scores for this scale are calculated by averaging individual item scores. Scores can range from 1 to 7, with a score of 4 (*neither agree nor disagree*) indicating that a respondent is about equally satisfied and dissatisfied with life. Higher scores indicate an increasing level of satisfaction with life, whereas lower scores indicate an increasing dissatisfaction with life. This scale has displayed adequate model fit and

reliability with 11–15 year old adolescents (Pons, Atienza, Balaguer, & García-Merita, 2000). The Cronbach's alpha coefficient was .88 for the current sample.

Analysis Strategy

The mediation hypotheses were tested for all three dependent variables: self-esteem, positive affect, and satisfaction with life. As statistical techniques to test mediation (e.g., Baron & Kenny method, 1986) suffer from problems including low statistical power, a lack of quantification of the intervening effect, and the inability to test multiple mediators simultaneously (Hayes, 2009), I employed non-parametric bootstrapping analysis developed by Hayes (2013). This analysis estimates direct and indirect effects in models with multiple proposed mediators and has been shown to perform better than other techniques (e.g., Baron & Kenny, 1986) in terms of statistical power and Type I error control (Hayes, 2009). Additionally, as it is not based on large-sample theory, it can be applied to smaller sample sizes (e.g., 143 participants; see Gonzalez, Reynolds, & Skewes, 2011) with greater confidence (Preacher & Hayes, 2004). To test for mediation I used the PROCESS macro for SPSS (Hayes, 2013) with 20,000 bootstrap resamples and 95% bias corrected confidence intervals (CIs). There is evidence of mediation, or a specific indirect effect, when zero is not included within the lower and upper bound CIs. This approach to mediation analysis with cross-sectional data has previously been used within sport psychology research (e.g., Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013).

Results

Preliminary Analysis

The data was screened for univariate and multivariate outliers, with 10 multivariate outliers deleted from the sample. The remaining data (n = 192) were

screened for normality. Skewness values ranged from -1.19 to 0.45 and kurtosis values ranged from -0.71 to 0.91, indicating reasonable normality (Curran, West, & Finch, 1996). As participants ranged from 10–19 years (a wide age range), I decided to compare 10–14 (n = 139) and 15–19 (n = 53) year olds on all variables. Independent samples t-tests revealed that mean scores only differed for positive affect, $t(188) = 3.30$, $p = .001$, and satisfaction with life, $t(188) = 2.51$, $p = .014$, with younger participants scoring higher on both. As there was no difference between 10–14 and 15–19 year olds on the other six variables, particularly the four life skills, I decided to conduct all further analysis on the whole sample.

Descriptive Statistics

Table 1 presents the means, scale ranges, standard deviations, reliability coefficients, and bivariate correlations for all variables. The mean score for coach

Table 1
Summary of Intercorrelations, Scale Ranges, Means, Standard Deviations and Reliability Estimates

	1	2	3	4	5	6	7	8
1. Autonomy Support	-							
2. Personal & Social Skills	.38***	-						
3. Cognitive Skills	.24***	.43***	-					
4. Goal Setting	.36***	.57***	.53***	-				
5. Initiative	.29***	.49***	.19**	.49***	-			
6. Self-Esteem	.25***	.36***	.08	.18*	.26***	-		
7. Positive Affect	.23**	.39***	.22**	.31***	.22**	.50***	-	
8. Life Satisfaction	.21**	.23***	.08	.05	.15*	.59***	.46***	-
Scale Range	1-7	1-4	1-4	1-4	1-4	1-6	1-5	1-7
Mean	5.61	3.29	2.11	3.18	3.73	5.24	4.21	5.86
Standard deviation	0.95	0.43	0.81	0.66	0.37	0.56	0.59	0.94
Cronbach's alpha	.93	.81	.83	.77	.71	.87	.89	.83

*$p < .05$, **$p < .01$, ***$p < .001$

autonomy support was 5.61 on the 1–7 scale, indicating that participants felt their coaches were displaying a high level of autonomy supportive behaviors. The mean scores on the

individual subscales of the YES-S revealed that participants perceived that they developed their life skills through sport. For personal and social skills, goal setting, and initiative, participants rated themselves above 3 (*Quite a bit*) on the 1–4 scale. In contrast, a score of 2.11 suggests that participants felt they were learning less about cognitive skills. For psychological well-being, mean scores revealed that participants displayed high levels of self-esteem (5.24 on the 1–6 scale), positive affect (4.21 on the 1–5 scale), and satisfaction with life (5.86 on the 1–7 scale). Overall, the correlations revealed that coach autonomy support was positively related to all four life skills and the three indices of psychological well-being. In general, the four life skills were positively correlated with the three psychological well-being indicators.

Main Analyses

Figure 1 displays unstandardized regression coefficients for each of the three mediation models. The three models allow for the investigation of the relationships between all measured variables. In all models, coach autonomy support was included as the independent variable. Personal and social skills, cognitive skills, goal setting, and initiative were included as parallel mediators. The first model included self-esteem as the dependent variable (panel A). The second model had positive affect as the dependent variable (panel B). The third model included satisfaction with life as the dependent variable (panel C). Results of the indirect effects are presented in Table 2 on page 68. The values in Table 2 show whether there is a total indirect effect and what effect, if any, each of the four mediators are having.

The models in Figure 1 show that coach autonomy support was positively related to all four mediators: personal and social skills ($\beta = .17$, $p < .001$), cognitive skills ($\beta = .20$, p

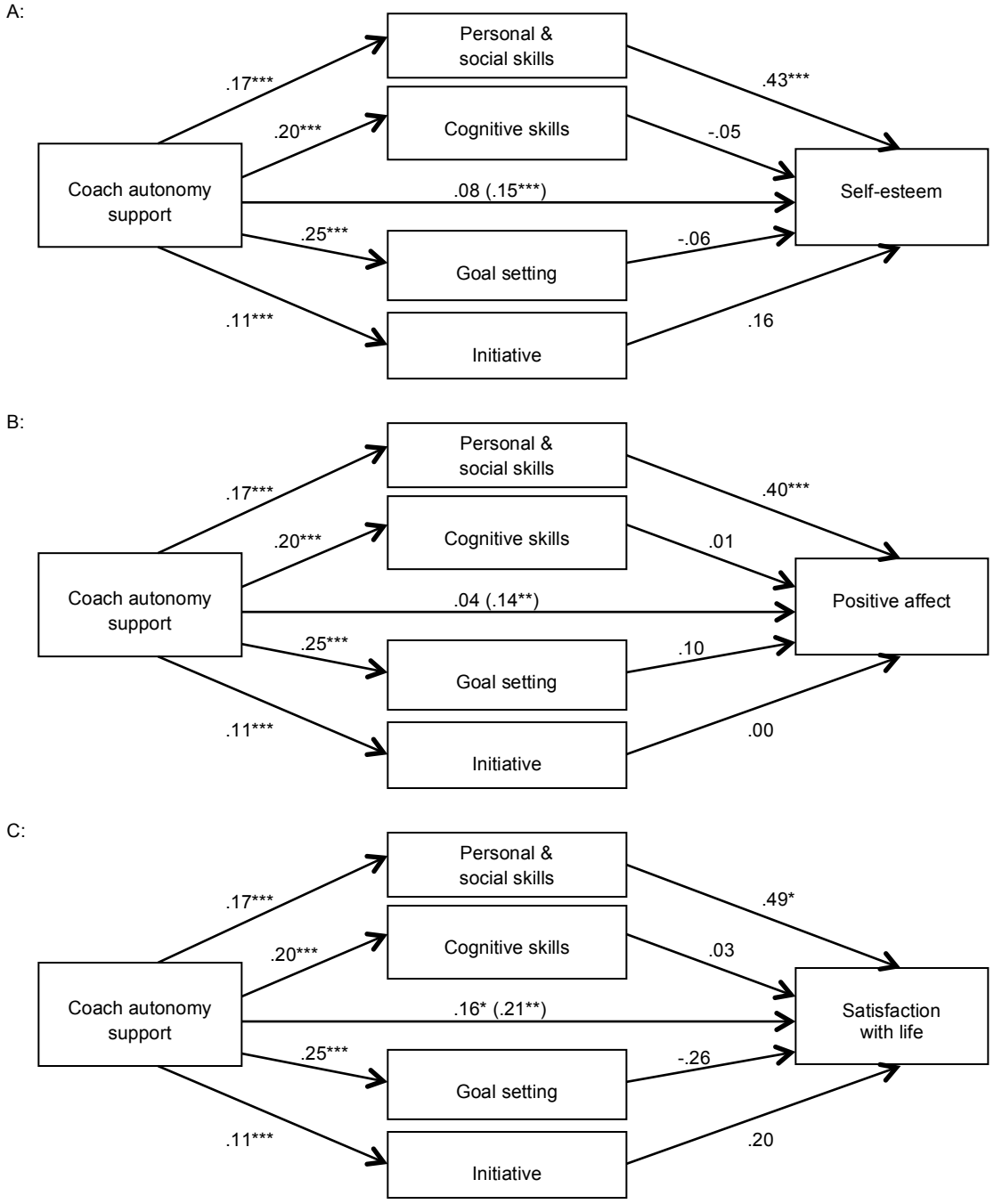

Figure 1. Regression models predicting self-esteem (panel A), positive affect (panel B), and satisfaction with life (panel C). Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on each indicator of psychological well-being are outside parentheses. The total effects are inside parentheses.
*p < .05, **p < .01, ***p < .001.

= .001), goal setting (β = .25, $p < .001$), and initiative (β = .11, $p < .001$). However, in all three models only personal and social skills were related to each psychological well-being indicator: self-esteem (β = .43, $p < .001$), positive affect (β = .40, $p < .001$), and satisfaction with life (β = .49, $p < .05$).

The first model included self-esteem as the dependent variable (Figure 1, panel A). According to the bootstrap procedure, the total effect of coach autonomy support on self-esteem was significant (β = .15, $p < .001$). When the mediators were entered into the model, the direct effect of coach autonomy support on self-esteem was non-significant, suggesting a mediating effect (β = .08, $p = .06$). Of the proposed mediators (see Table 2) only personal and social skills displayed a significant indirect effect, β = .07, $p = .002$, 95% CI = [.03, .13]. Thus, the effect of coach autonomy support on self-esteem was fully mediated by personal and social skills.

The second model included positive affect as the dependent variable (Figure 1, panel B). According to the bootstrap procedure, the total effect of coach autonomy support on positive affect was significant (β = .14, $p = .002$). When the mediators were entered into the model, the direct effect of coach autonomy support on positive affect was non-significant, suggesting a mediating effect (β = .04, $p = .34$). Of the proposed mediators (see Table 2) only personal and social skills displayed a significant indirect effect, β = .07, $p = .005$, 95% CI = [.02, .13]. Thus, the effect of coach autonomy support on positive affect was fully mediated by personal and social skills.

The third model included satisfaction with life as the dependent variable (Figure 1, panel C). According to the bootstrap procedure, the total effect of coach autonomy support on satisfaction with life was significant (β = .21, $p = .003$). When the mediators were

Table 2

Indirect Effects of Coach Autonomy Support on Psychological Well-being (Self-esteem, Positive Affect, and Satisfaction with Life) Through Each Mediator

	Bootstrap effect	Normal effect	Normal theory tests			95% CI
			SE	*z*	*p*	
Self-esteem						
Total effect	.07					[.02, .12]
Personal & social skills	.07	.07	.02	3.04	.00	[.03, .13]
Cognitive skills	-.01	-.01	.01	-0.87	.38	[-.04, .01]
Goal setting	-.01	-.01	.02	-0.69	.49	[-.06, .02]
Initiative	.02	.02	.02	1.20	.23	[-.01, .05]
Model	$F(5, 186) = 7.14$***, $R^2 = .16$					
Positive affect						
Total effect	.10					[.05, .15]
Personal & social skills	.07	.07	.02	2.80	.01	[.02, .13]
Cognitive skills	.00	.00	.01	0.21	.83	[-.02, .03]
Goal setting	.03	.03	.02	1.13	.26	[-.02, .08]
Initiative	.00	.00	.02	.00	.99	[-.04, .03]
Model	$F(5, 186) = 7.53$***, $R^2 = .17$					
Satisfaction with life						
Total effect	.05					[-.02, .12]
Personal & social skills	.08	.08	.04	2.16	.03	[.02, .17]
Cognitive skills	.01	.01	.02	0.32	.75	[-.03, .05]
Goal setting	-.07	-.07	.04	-1.74	.08	[-.15, .01]
Initiative	.02	.02	.03	0.86	.39	[-.02, .07]
Model	$F(5, 186) = 3.65$**, $R^2 = .09$					

Note. Bootstrap generated confidence intervals. CI = confidence interval.
**$p < .01$, ***$p < .001$

entered into the model, the direct effect of coach autonomy support on satisfaction with life was still significant, although reduced, suggesting partial mediation ($\beta = .16$, $p = .033$). Again, of the proposed mediators (see Table 2) only personal and social skills displayed a significant indirect effect, $\beta = .08$, $p = .03$, 95% CI = [.02, 17]. Thus, the effect of coach autonomy support on satisfaction with life was partially mediated by personal and social skills.

Discussion

Previous studies have found that the coaching climate is positively related to participants' life skills development in youth sport (e.g., Gould et al., 2012; Vella et al., 2013). Like these studies, this study found that coach autonomy support was positively related to the development of personal and social skills, cognitive skills, goal setting, and initiative. These findings suggest that coach autonomy support plays an important role in ensuring that youth sport participants develop these life skills. In practice, this indicates that coaches should listen to their athletes, allow athletes to share their feelings, offer choice in training, encourage athletes to ask questions and show initiative, provide feedback on competence, and display confidence in their athletes. The application of self-determination theory to life skills research would suggest that coach autonomy support will satisfy athletes' needs for autonomy, competence, and relatedness, and thus encourage athletes' to develop their life skills (Hodge et al., 2012). Given that the three needs were not measured in the present study, future research is required to investigate such causal mechanisms.

This study adds to the literature by showing that learning personal and social skills within sport was positively related to participants' self-esteem, positive affect, and satisfaction with life. In doing so, this study was the first one in youth sport to provide some support for Benson and Saito's (2001) proposition that the development of life skills are positively related to young peoples' well-being. This finding is in agreement with non-sport research which has shown that personal and social skills are positively related to psychological well-being (e.g., Humphrey et al., 2011; Riggio et al., 1990) and other positive outcomes such as relationship development and social acceptance (Matson

et al., 2010). It is plausible that relationship development and social acceptance account for the association between personal and social skills and psychological well-being found in the present study. By developing personal and social skills, young people may learn the skills necessary to develop relationships and gain social acceptance; which, in turn, may have a positive impact on their psychological well-being. Nonetheless, future research is needed to investigate whether this is the case or not.

Unlike personal and social skills, cognitive skills, goal setting, and initiative were unrelated to self-esteem, positive affect, and satisfaction with life when tested within the mediational models. This result was surprising given that previous research has shown these skills to be positively related to other important outcomes. For instance, research has found that cognitive skills are positively related to academic performance (Elliott et al., 1990). Regarding cognitive skills, it is plausible that school sports – which have a more educational mandate than the club sports used in this study – are more likely to develop young peoples' cognitive skills. Therefore, future studies may obtain different results using a sample of school sport participants.

Of importance for the current study was investigating whether life skills development mediates the relationships between coach autonomy support and participants' psychological well-being. Past studies have shown that coach autonomy support is positively related to indices of psychological well-being such as self-esteem (Standage & Gillison, 2007), positive affect, and life satisfaction (Smith et al., 2007). The present study corroborated such findings in youth sport. Building on previous research, this study also showed that the development of personal and social skills mediated the relationships between coach autonomy support and participants'

psychological well-being.

Overall, the results of this study provided partial support for Benson and Saito's (2001) framework for youth development. This framework suggested that the coaching climate would be related to young people developing their life skills (e.g., personal and social skills); which, in turn, would be related to young peoples' well-being. Although this study supported personal and social skills as a mediator, it also showed that cognitive skills, goal setting, and initiative did not mediate the relationships between coach autonomy support and participants' psychological well-being. This suggests that personal and social skills may be more important when explaining why coach autonomy is related to psychological well-being, as compared to cognitive skills, goal setting, and initiative. Based on this finding, I would suggest that coaches put particular emphasis on encouraging team/group members to develop their personal and social skills. For instance, coaches could provide opportunities for athletes to learn personal skills such as working with others by having groups of athletes responsible for organizing/maintaining the training equipment. Coaches could also encourage athletes to develop their social skills by providing opportunities for social interaction through off-field activities (e.g., team-building events).

It is important to note that this study is not without limitations. One limitation was the survey used to measure life skills development (the YES-S; MacDonald et al., 2012). CFA results did not support the personal and social skills subscale, with fit indices well above or below the recommended criteria and four items displaying high modification indices. Although EFA supported the factor structure of the personal and social skills subscale during its development (MacDonald et al., 2012), it was important

to confirm, or in this case disconfirm, the factor structure of the subscale with an independent sample. A lack of support for the personal and social skills subscale caused the author to take a closer look at items within the other three subscales. Despite CFA supporting the factor structure of each of the three subscales, the cognitive skills, goal setting, and initiative subscales contained items which were possibly problematic. Within the cognitive skills subscale, several items seem to lack relevance for the youth sport domain (e.g., "improved academic skills" and "improved computer/internet skills"). Supporting this point was the fact that participants scored lowest on the cognitive skills subscale. The same low scoring for cognitive skills was evident in other studies using the YES-S (MacDonald et al., 2011; Vella et al., 2013). Both the goal setting and initiative subscales also contained items which could be deemed problematic; in particular, some items seemed to lack content validity. For example, one item in the goal setting subscale ("learned how others solve problems and learned from them") does not seem to reflect the construct of goal setting and may be more representative of a problem solving skill. The same was true of the initiative subscale where one item ("improved athletic or physical skills") does not seem representative of initiative, which involves "the ability to be motivated from within to direct attention and effort toward a challenging goal" (Larson, 2000, p. 170). Given these measurement limitations, the results of the study should be interpreted with caution. A second limitation with the present study was the use of self-report data. With any self-report data there is concern with social desirability and the truthfulness of responses. However, the effects of the above concerns were held to a minimum through assurances of anonymity and requests for honesty in responding. A third limitation of this study concerns the cross-sectional research design,

which meant that the issue of causality could not be examined. This study design only allowed for the basic relationships between variables to be examined (i.e., is coach autonomy support related to the development of personal and social skills), as opposed to cause-and-effect relationships (does coach autonomy support cause the development of personal and social skills). Although a cross-sectional research design is common with preliminary and exploratory studies, experimental or longitudinal studies are more appropriate for establishing causality.

Concerning measurement, future research should re-assess the factor structure of the YES-S via CFA. Researchers could also look to develop a comprehensive measure of life skills development through sport. Such a measure should be developed specifically for sport and rigorously tested for validity and reliability. Given the partial support for Benson and Saito's (2001) framework in this study, future research should use this framework to investigate positive youth development through sport. In particular, studies could investigate the relationships between other aspects of the coaching climate (e.g., the coach-athlete relationship), other life skills that young people develop through sport (e.g., communication and leadership), and other well-being outcomes (e.g., subjective vitality). Such research will help explain how young people develop positively through taking part in sport. Finally, experimental or longitudinal studies should investigate the causal relationships between the coaching climate, life skills development, and psychological well-being.

Overall, this study provided support for the idea that coach autonomy support is positively related to young peoples' development and well-being. Based on these findings, youth sport coaches should be encouraged to create an autonomy-supportive climate. In

practical terms, coaches could be trained to display autonomy supportive behaviors such as listening to their athletes, fostering athletes' independence, and providing choice within training. Coaches should also endeavor to provide youth sport participants with opportunities to develop their personal and social skills, cognitive skills, goal setting, and initiative. For example, coaches could help participants to develop personal skills such as controlling their emotions (e.g., after an official makes a bad call), provide opportunities for athletes to develop their social skills (e.g., through team events), ensure participants develop their cognitive skills (e.g., by analyzing their competition tactics), teach athletes the basic principles of goal setting, and offer opportunities for participants to develop initiative (e.g., give athletes responsibility for organizing the warm-up). By creating such an environment, coaches will help facilitate positive youth development through sport.

Overview of Phase 2

Given the limitations of the measure used to assess life skills in Study 1, Phase 2 of this programme of research involved developing a scale to assess life skills development through sport. Chapter 4 begins with a review of measurement in psychology and goes on to outline the importance of life skills development for young people. Chapter 4 also describes a series of four studies (Studies 2–5) which sought to develop and validate a life skills scale for sport. Study 2 outlines the development of this scale. This study involved defining each of the eight life skills, deciding what components comprise each life skill, and developing items that could adequately assess the life skills. The items developed were reviewed by 39 academics with expertise in one of the eight life skills. Using the ratings and comments provided by experts, items were selected for the first version of the Life Skills Scale for Sport (LSSS). Study 3 used a sample of 338 youth sport participants

to reduce the LSSS from 144 to 47 items using both EFA and descriptive statistics. The factor structure of the subscales was analysed using EFA and the internal consistency reliability of each subscale was also assessed. Study 4 sought to confirm the factor structure of the 47-item scale with an independent sample of 223 youth sport participants. This led to the reduction of the scale to 43 items as four items were removed. Both the convergent and discriminant validity of the LSSS was also assessed. Study 5 examined the test-retest reliability of the LSSS with another sample of 37 youth sport participants.

Chapter 4 – Measurement of Life Skills Development Through Sport

Measurement in Psychology

It would be no exaggeration to say that measurement is at the heart of scientific enquiry. This is best summed up by Stevens' (1967) quote: "the history of science is the history of man's [*sic*] efforts to devise procedures for measuring and quantifying the world around him [*sic*]" (p. 734). Others go further by suggesting that without measurement there would be no empirical science (John & Benet-Martínez, 2000). Whether it is a chemist measuring pH, a sport scientist measuring lactate, or a psychologist measuring self-esteem, measurement plays a key role in scientific research and practice. But what exactly do we mean when we refer to measurement?

Within psychology, measurement has been defined as "the assignment of numerals to objects or events according to rules" (Stevens, 1946, p. 677). According to DeVellis (2011), assigning numbers to objects or events has a few advantages. It allows us to communicate more efficiently and precisely. For example, the Borg (1982) scale is familiar to sport scientists as a way to communicate ratings of perceived exertion and performance profiling (Butler, 1989) is familiar to sport psychologists for communicating an athlete's level of performance. Measurement also allows us to use the power of statistics to make our scientific observations more meaningful. For instance, we can statistically assess whether one variable is related to another or whether one group differs from another. Another advantage of measurement is that it allows for parsimony. That is, quantifying variables allows for the parsimonious description of a large numbers of variables and participants.

Measurement has a long history within psychology originating with Galton's assessment of individual differences in the 1860s (Boring, 1961). A key development for

psychology occurred at the turn of the twentieth century when Binet developed scales to test mental abilities (DeVellis, 2011). At this time, the ability to measure psychological phenomena was an important step, as quantification was deemed necessary for the legitimacy of psychology as an emerging science (Boring, 1961). Later in the twentieth century, a publication by Likert (1932) marked an important development for psychology – the creation of the response scale. The original Likert scale contained the following response options: (a) strongly approve, (b) approve, (c) undecided, (d) disapprove, and (e) strongly disapprove. Similar types of response scales are used to measure a range of attitudes, beliefs, feelings, values, and perceptions in modern psychology. Despite such developments, measurement within psychology has not been without its critics.

Some researchers (e.g., Kline, 2000) have argued that Stevens' (1946) definition of measurement for psychology (i.e., "the assignment of numerals to objects or events according to rules") could be viewed as unscientific. The essence of this argument is that "an attribute must satisfy the condition of quantity to be measurable" (Trendler, 2009, p. 582). This criticism stems from the idea that response scales cannot produce interval data, which some believe to be essential for the use of multivariate statistics (Gaito, 1980). Unlike the natural sciences, psychological attributes have units whose equality cannot be demonstrated by direct comparison in the way that the equality of inches or pounds can. As a result, critics such as Trendler (2009) argue that psychological phenomena are not measurable. A further difficulty for psychology is that the reliability of measurement scales depends on the people completing them. Two problems affect the reliability of such scales: acquiescence bias and social desirability. Acquiescence bias is the tendency for people to agree with statements irrespective of their content and has long been known to be

a problem with psychological scales (Johns, 2010). Social desirability reflects a tendency to endorse an item not reflecting its meaning but its social desirability (Kline, 2000). These problems can leave the measurement of psychological phenomena vulnerable to error. Despite such shortcomings, there are counter arguments supporting the use of measurement in psychology.

To begin with, measurement has a long history within psychology and has resulted in a vast amount of research which has helped the field progress. Presently, there are tens of thousands of psychological tests within the public domain (Furr & Bacharach, 2013). Most researchers would agree (e.g., DeVellis, 2011; Kline, 2000) that these measurement scales have helped individuals in a wide variety of contexts. Therefore, it would seem absurd to stop measuring psychological phenomena and abandon the body of knowledge built up from psychological testing (Kline, 2000). A further argument for measurement in psychology centres on the idea that psychological constructs like motivation are either impractical or impossible to measure without the use of a measurement scale (DeVellis, 2011). In effect, measurement is currently the best method of reducing a large number of peoples' experiences to a manageable number that can be used for hypothesis testing. Alternatively, if you want an in-depth understanding of a small number of peoples' experiences you may prefer to use qualitative methods. In reference to interval data, proponents of measurement scales suggest that the empirical evidence supports the view that Likert scales do produce interval data (Carifio & Perla, 2008). According to Likert's original argument, survey respondents do construe the response scale in terms of evenly-spaced points along an underlying attitude continuum (Johns, 2010). Others suggest that statistical procedures only make distributional assumptions, not assumptions about the type

of scale used (Hand, 1996). Thus, the idea that statistical procedures require interval data is simply untrue (Gaito, 1980). Putting these ongoing arguments aside and accepting that measurement scales are here to stay, it remains that accurate measurement is of primary importance for psychology.

Indeed, a challenge for psychology is ensuring the accuracy of its measurement scales. This stems from the difficulty of measuring constructs which cannot be directly assessed. For instance, it is hard to measure motivation because it cannot be assessed directly; therefore, we rely on peoples' introspection to measure motivation. In a sense, the scale we create to measure motivation is only a proxy used to measure motivation or as Sarle (1997) states: "measurements are not the same as the attribute being measured" (p. 1). A key point to note is that if a construct is not measured well, it cannot be studied with any scientific validity (Furr & Bacharach, 2013). For example, a very poor measure of athlete enjoyment renders the correlation between the coaching climate and athlete enjoyment meaningless. Put another way, statistical significance is of little value if the measures utilized are not reliable and valid (Nunnally, 1978). Therefore, any scale needs to be of a high standard to ensure we can accurately measure the construct in question and test its relationships with other constructs. This poses the question: are psychological scales living up to this high standard or could they be improved?

The consensus amongst researchers (e.g., DeVellis, 2011; Kline, 2000) is that the quality of measurement in psychology is not of a high standard and that it needs to be improved. Kline (2000) goes further by suggesting that many psychological scales are technically poor and don't measure what they claim to measure. According to DeVellis (2011), researchers often throw items together and assume they constitute an appropriate

scale. Yet, without taking the time and effort to follow the 'best practice' guidelines for developing a scale (e.g., Clark & Watson, 1995; DeVellis, 2011; Hinkin, 1995), it is unrealistic to expect anything other than a poor measure. Despite this bleak picture, one branch of psychology called psychometrics has always been concerned with accurate measurement.

Psychometrics is "the study of the operations and procedures used to measure variability in behaviour and to connect those measurements to psychological phenomena" (Furr & Bacharach, 2013, p. 10). The aim of psychometrics is to develop scales to measure attitudes, beliefs, feelings, values, and so forth. Psychologists use instruments referred to as scales to assess these constructs. The terms measure, instrument, inventory, battery, schedule, survey, and assessment are often used interchangeably with the term scale. Essentially, a scale is a measurement instrument containing a collection of items which are combined into a composite score (DeVellis, 2011). These composite scores are used to assess the relationships between variables. As stated in the preceding paragraphs, it is important to use an accurate scale when measuring psychological constructs.

The cornerstones of accurate measurement are reliability and validity. It is commonly agreed that ensuring scales are both reliable and valid should be the first stage in the research process (Schutz, 1994). By ensuring that scales are reliable and valid, a researcher can be sure that a true relationship exists between variables. Therefore, it is important to thoroughly assess the reliability and validity of a newly developed scale.

Reliability

Scale reliability has been described as the proportion of variance attributable to the true score of the latent variable (DeVellis, 2011). Classical test theory dictates that a latent

variable is comprised of a true score and an error score (John & Benet-Martínez, 2000). To ensure reliability, it is necessary to maximise the true score and minimise the error score. Two types of reliability allow us to assess the true score and error score of a scale: internal consistency reliability and test-retest reliability. Internal consistency reliability refers to the extent to which each item in a scale is measuring the same variable, with values closer to 1.0 representing greater reliability (Pallant, 2005). An internal consistency reliability of .70 is deemed appropriate for the psychological domain, with values greater than .80 being preferred for new scales (Nunnally & Bernstein, 1994). Test-retest reliability refers to the stability of scores over time (Kline, 2000). With precise measurement, the correlation of time 1 and time 2 scores over a short timeframe should be as close to 1.0 as possible. The advantage of using a more reliable scale – as evidenced by internal consistency reliability and test-retest reliability – is that relatively less error is contributed to the statistical analysis (DeVellis, 2011). Using more reliable scales also increases statistical power for a given sample size, relative to less reliable scales (DeVellis, 2011). Like reliability, validity is also an important attribute of an accurate scale.

Validity

Validity has been defined as the ability of a scale to measure what it is supposed to measure (Pallant, 2005). Unfortunately, the assessment of validity is far less precise and more subjective than the measurement of reliability (Kline, 2000). Numerous forms of validity are required to infer that a scale is 'truly' valid. The five major types of validity are content validity, convergent validity, discriminant validity, predictive validity and construct validity.

Content validity is "the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose" (Haynes, Richard, & Kubany, 1995, p. 239). For example, does an item like "this sport has taught me to work well with others" actually reflect teamwork skills? A scale has content validity when its items measure what they are supposed to measure and items represent the breadth of the construct in question (John & Benet-Martínez, 2000). For instance, if interpersonal communication involves speaking, listening, and non-verbal components, an interpersonal communication scale should contain items assessing these three components.

Convergent validity involves evidence of similarity between measures of theoretically related constructs (DeVellis, 2011). Convergent validity can also be shown when all individual items in a scale load adequately (converge) onto their corresponding factor (Anderson & Gerbing, 1988). For example, items from the positive affect subscale of PANAS (Watson et al., 1988) would be expected to converge on the positive affect factor; whereas, items from the negative affect subscale would be expected to converge on the negative affect factor.

Discriminant validity is the absence of very large correlations between measures of unrelated constructs (DeVellis, 2011). Discriminant validity can also be demonstrated when subscales within an overall scale are shown to be measuring independent constructs. For instance, life skills such as teamwork, leadership, and interpersonal communication should not be so highly correlated that they are essentially measuring the same construct.

Predictive validity, sometimes referred to as criterion-related validity, is the ability of a test to predict some appropriate criterion (Kline, 2000). Often times, this involves finding an association with another independent measure. For example, if intrinsic

motivation is said to be related to sports enjoyment, scores on an intrinsic motivation measure should be related to scores on a 'gold standard' measure of sports enjoyment.

Lastly, construct validity subsumes all categories of validity and involves consideration of the major types of validity (Haynes et al., 1995). When assessing construct validity a researcher should consider content validity, convergent validity, discriminant validity, and predictive validity. Only after assessing the various types of validity, can one decide whether a scale is deemed to be valid or not.

Recent Perspectives on Validity

It is important to highlight that recent developments in psychology have revised the concept of validity. Experts now view validity and reliability as a property of test scores rather than a property of a test (Thompson, 2003; Messick, 1995). That is, a test can no longer be deemed 'valid' but analysis of test scores can provide evidence of validity. Another recent development is that validity is now viewed as an ongoing process and all measures should be continually critiqued, assessed, and improved to ensure their validity (DeVellis, 2011). Without sufficient evidence, it would be incorrect to assume that a scale is valid across different samples, contexts, and times. Finally, validity is currently viewed as a unified concept rather than a multitude of different 'types' of validity (Vaughn & Daniel, 2012). As a result, various sources of evidence must be assessed before judging the quality of validity, or as Messick (1995) suggests, validity is an evaluative summary of the evidence for a measure.

To help judge validity evidence, *The Standards for Educational and Psychological Testing* (*The Standards*; AERA et al., 1999) is a manual which deals with the quality of measurement instruments. This manual was developed through collaborations between the

American Educational Research Association (AERA), the American Psychological Association (APA), the National Council on Measurement in Education (NCME), and committees involving leading psychometricians. According to *The Standards* (1999), validity evidence can be divided into five categories:

1. Test content. This refers to whether evidence is provided to suggest that a test and its items represent the construct being measured. This could be viewed as akin to content validity.
2. Internal structure. This refers to whether the structure of the test is as expected. For example, the PANAS (Watson et al., 1988) should display a two-factor structure (i.e., positive and negative affect). Both factor analysis (i.e., EFA and CFA) and reliability coefficients (i.e., Cronbach's alpha values) can be used to assess internal structure.
3. Relationships to other variables. This involves ensuring that a measure is related to variables it should be related to, and not related to variables it should not be related to. For instance, a self-esteem measure would be expected to be positively related to a positive affect measure, whereas it would not be expected to be related to a measure of an athlete's imagery preference (e.g., internal versus external).
4. Response processes. This addresses whether responses of participants match the intended interpretation of the construct (Goodwin, 2002). For example, one would expect participants to recount experiences of learning life skills when completing a measure of life skills development through sport.
5. Consequences of testing. This focuses on the social consequences of testing and the interpretation of scores. It was incorporated into *The Standards* (1999) as higher

validity requirements are necessary for tests which may greatly impact peoples' lives (e.g., a test used to assign students to a remedial or 'A' class within school). Along with proposing these five categories of validity evidence, this manual suggests that researchers should describe validity evidence as opposed to types of validity. Furthermore, *The Standards* (1999) contends that reliability should be included when assessing validity evidence, as assessing measurement error is important when interpreting the quality of data from which inferences are made. A benefit of using *The Standards* (1999) is that it provides researchers with a framework to assess the validity of test scores.

In sum, various forms of reliability and validity evidence are necessary to ensure accurate measurement. Concerns with both reliability and validity should be demonstrated from the moment a researcher decides to develop a scale. Both reliability and validity evidence should be collected throughout the scale development and validation process. Researchers also suggest that greater emphasis be paid to the front-end of the process when a scale is being developed (MacKenzie, Podsakoff, & Podsakoff, 2011). This is especially the case in sport and exercise psychology, where unique constructs are often being measured for the first time. As a branch of psychology, sport and exercise psychology has its own literature on measurement.

Measurement in Sport and Exercise Psychology

Like with mainstream psychology, it is imperative that measurement is trustworthy and accurate in sport and exercise psychology. Given that valid and reliable measurement is an ongoing process (DeVellis, 2011), measurement is a very challenging issue in a relatively young discipline like sport and exercise psychology, where many constructs are new, unique, and undefined (Tenenbaum, Eklund, & Kamata, 2012). As such, several

researchers have recently reviewed the quality of measurement in sport and exercise psychology.

Zhu (2012) reviewed measurement publications from the *Journal of Sport & Exercise Psychology*, the *Journal of Applied Sport Psychology*, and *The Sport Psychologist* in 2008. To begin with, Zhu's (2012) findings highlighted that most studies were using old concepts and terms such as construct validity, factorial validity, and external validity rather than referring to validity evidence. Secondly, results highlighted an over-reliance on factor analysis at the expense of other forms of validity evidence (e.g., content validity and relationships with other variables). Thirdly, it was noted that most studies only reported internal consistency reliability and failed to assess test-retest reliability. Fourthly, it was reported that far too many 'one-shot' studies are conducted using a convenience sample of university students. On a positive note, Zhu (2012) highlighted that some publications were reporting several studies to provide further validity evidence for a scale.

A later study dealing with measurement in sport and exercise psychology was conducted by Gunnell et al. (2014b). This study assessed 50 publications that used the Behavior Regulation in Exercise Questionnaire (BREQ; Mullan, Markland, & Ingledew, 1997) against *The Standards* (1999). These researchers found that no study assessed either the 'response processes' or 'consequences of testing' as recommended by *The Standards* (1999). These authors also highlighted that there was a tendency for researchers to rely solely on previous validity evidence, which goes against the idea that validity is an on-going process (DeVellis, 2011).

A second study by Gunnell et al. (2014a) reviewed validity evidence presented in the *Journal of Sport & Exercise Psychology* from 2002–2012. These authors selected 50

articles which used the words valid, validation, or validity in their title, abstract, or keywords. The majority of these articles (n = 44) had the validation of a scale as their primary purpose. Again, both response processes and consequences of testing were the two aspects of *The Standards* (1999) which were absent from these studies. Gunnell et al. (2014a) also highlighted that only 18 of the 50 studies assessed test content, whereas 46 studies investigated internal structure, and 39 studies assessed relationships with other variables.

In summary, measurement in sport and exercise psychology seems to be lagging slightly behind its parent disciplines of psychology and education (Zhu, 2012). In particular, the terminology used to describe validity, the overemphasis on factor analysis, the failure to assess test-retest reliability, and the lack of content evidence for measures are areas in need of improvement. Along with *The Standards* (1999), there is a vast amount of literature which addresses the front-end processes of scale development. A description of this literature is provided below.

How to Develop a Scale

There are various steps involved in developing a good quality scale (see DeVellis, 2011 for a thorough review). Before taking any of these steps, one must first be certain that a good scale does not already exist. After deciding on the need for a scale, experts in scale development (e.g., Clark & Watson, 1995; DeVellis, 2011) suggest the following steps: (1) define the construct you want to measure, (2) list the components of the construct, (3) generate an item pool, (4) review all items carefully, (5) assess the content validity of items, (6) select the response scale, and (7) decide on the scale length and format. During this section of the thesis, each of these steps is described in turn.

Define the Construct

The first step when developing a scale is to define the construct to be measured (Clark & Watson, 1995). This often involves reviewing the literature for appropriate definitions of the construct. If no adequate definition already exists, the researcher may need to develop their own definition. When deciding on an appropriate definition, it is often a case of deciding between a broad versus a narrow definition. A broad definition may include aspects that are extraneous to the construct, whereas a narrow definition may exclude some important aspects of the construct. During the scale development process it is probably best to err on the side of using a broad definition, as it is easier to eliminate extraneous items rather than adding necessary items at a later stage (Clark & Watson, 1995).

List the Components of the Construct

After determining a definition, it is important to decide on the components that make up the construct (Clark & Watson, 1995). This means carefully reviewing the literature to see what components other researchers see as comprising the construct. In a newer discipline like sport and exercise psychology, it may be necessary to draw on disciplines such as mainstream psychology or organisational psychology when deciding on the components of a construct. Selecting components is a balancing act between including all relevant components of a construct versus including irrelevant components (Messick, 1995). Again, it is probably wise to err on the side of selecting too many components, as extraneous components can be identified and eliminated later in the scale development process (Clark & Watson, 1995).

Generate an Item Pool

After defining and selecting the components of your construct, it is necessary to develop items that assess the construct (Clark & Watson, 1995). Each item should clearly reflect the construct as the quality of a scale is directly determined by the items that make up the scale (DeVellis, 2011). Items can come from a variety of sources including reviews of the literature, deduction from the definition of the construct, previous research on the construct, suggestions from experts in the field, interview or focus group discussions with representatives from the population of interest, and examining other measures of the construct (MacKenzie et al., 2011). During the scale development process, it is important to generate a large pool of items (Clark & Watson, 1995). It is not unusual to begin with an item pool which is three or four times as large as the final scale (DeVellis, 2011). For example, when developing the 17-item Youth Sport Environment Questionnaire, Eys, Loughead, Bray, and Carron (2009) started with 142 items. The logic behind including so many items is that the expert review process and later statistical analysis will eliminate inadequate items. Thus, the greater the number of original items, the greater the chance of being left with a smaller number of quality items. Obviously there needs to be some balance, as including an unwieldy number of items may not be conducive to getting experts to review items and an overly large item pool may include too many similarly worded items which cannot be differentiated.

Review all Items Carefully

The next stage in the scale development process is to carefully review all items. This process may be aided by using independent parties who can assess items. Independent parties may include colleagues with expertise in the particular domain,

colleagues with a good grasp of grammar, punctuation, and spelling, or representatives from the population of interest. When reviewing items, DeVellis (2011) recommends keeping items short and easy to understand, making sure items are at the appropriate reading level (e.g., items in a youth sport scale can be read by an 11 year old), avoiding double-barreled items (e.g., "this sport taught me to set challenging and specific goals"), and avoiding colloquial language that may not be understood in other cultures. It is also important to judge the relevance of items for the target population (Terwee et al., 2007). For example, an item from Strom, Strom, and Moore's (1999) Peer and Self Evaluation of Team Skills (e.g., "teaches peers by explaining or reviewing concepts or assignments") may be relevant for teamwork in education but less relevant for teamwork in sport.

Assess the Content Validity of Items

After carefully reviewing items, the next step is to gather content validity evidence for the items (Clark & Watson, 1995). The most common way to gather content validity evidence is to have a panel of experts review the items (Haynes et al., 1995). These experts should have expertise in the domain of interest and, if possible, be independent of the scale developer as friends of the scale developer may be less likely to be critical of items. To begin the review process, expert reviewers should be informed about the scale. This means explaining the purpose for the scale, defining the construct to be measured, outlining the components of the construct, and describing the population the scale will be used with. Experts should then be asked to rate how well each item measures the construct of interest. Such ratings will allow the scale developer to assess and compare the quality of particular items. Reviewers should also be asked to assign items to whatever component of the construct they believe the item represents. This will help the scale developer to ensure that

each component of a construct is represented in the scale. Finally, experts should be allowed to comment on individual items (e.g., their clarity, conciseness, simplicity, etc.) and add 'additional comments' that will aid in the development of the scale. After reviewing experts' ratings and comments, it is the scale developer's job to select items for the initial scale (DeVellis, 2011).

Select the Response Scale

After deciding on items for the scale, the scale developer must decide on the response scale to be used. Within psychology, scales with anywhere from two to nineteen response options have been used in the past (Matell & Jacoby, 1972). Based on how we 'chunk' memory, researchers have suggested using 7 response options, plus or minus two (Fanning, 2005). Hinkin (1995) suggested that either five or seven response options are used more frequently than more or less response options, and Johns (2010) indicated that standard practice is to use a neutral midpoint. With a younger population (i.e., 11–21 year olds), it may be necessary to use less response options due to the lesser cognitive abilities of these respondents. For example, Borgers and Hox (2000) reported that offering more than seven response options decreases the reliability of data obtained from 8–16 year olds. Along with deciding on the number of response options, the scale developer must ensure that the word label at each response option forms an appropriate gradation. For instance, do the following word labels (e.g., 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree') progress logically along a 5-point scale? Again, it is the scale developer's job to decide how many response options and what word labels will be used.

Decide on the Scale Length and Format

The last decision to make when developing a scale is to decide the length of the scale and the format the scale should take. The scale must be long enough to assess the construct/s in question, but not so long that respondents will lose interest or fail to respond (Herzog & Bachman, 1981). The format of the scale includes the instructions, layout, and general presentation of the scale. Scale developers should aim for a format that is clear, easy-to-follow, and looks professional (Fanning, 2005). For example, a professional looking scale should be well-written, use an adequate font size, be devoid of spelling, grammar, or punctuation errors, and include the university's name and crest/logo. Such attention to detail should help ensure full and accurate responses from participants (Fanning, 2005).

Brief Summary

The above sections began by defining measurement and explaining the history of measurement in psychology. Arguments for and against measurement were described and the current state of measurement in psychology was examined. Both reliability and validity were covered in some detail and measurement in sport and exercise psychology was briefly discussed. Lastly, the steps for developing a good quality scale were described. Combined, this information helped guide the development of a scale to assess life skills development through sport. The sections which follow describe four separate studies which were conducted to develop and validate a life skills scale for sport.

Introduction to Studies 2–5

When developing a scale, one first has to establish whether such a scale is needed. Within sport psychology, there is currently only one measure available to assess life skills development through sport (the YES-S; MacDonald et al., 2012). However, the personal and social skills subscale of the YES-S was not supported via CFA in Study 1. Furthermore, the cognitive skills subscale contained items that were deemed somewhat irrelevant for youth sport, and the goal setting and initiative subscales contained items that seemed to lack content validity. For these reasons, this scale was limited in its ability to measure life skills development through sport. Without the availability of alternative measures and heeding the call for a life skills measure to be developed (Gould & Carson, 2008), I decided to develop a scale which measures life skills development through sport.

Based on the steps outlined in the section on "How to Develop a Scale" (page 88–93), I began this process by defining life skills. According to Hodge and Danish (1999), life skills have been defined as the skills that are required to deal with the demands and challenges of everyday life. Danish et al. (2005) suggested that life skills can be behavioural (e.g., teamwork), cognitive (e.g., problem solving), interpersonal (e.g., leadership) or intrapersonal (e.g., goal setting). It is important to note that the term skill depicts an acquired capacity (Hanbury & Malti, 2011). Therefore, life skills can be viewed as skills that are acquirable through sport and can be applied to other areas of a person's life. I decided to use the term 'life skills' because the term is familiar to sportspeople, with skills being viewed as something which coaches and athletes can learn and improve. By using familiar terminology, it was hoped that future studies and interventions would maximise engagement with sporting populations.

The selected definition shaped the inclusion and exclusion of certain life skills in the scale. Only the most prevalent life skills highlighted by previous research were included. These were life skills that youth sport participants, coaches, and parents frequently cited as being learned through sport. Also, life skills such as initiative were broken down into their component skills of goal setting and time management (Dworkin et al., 2003). Lastly, only the life skills that were viewed as transferable to non-sport domains were included, as such transfer is important if we are to say that a skill is truly a 'life' skill. Although there are a wide range of life skills that young people require, this scale focused on eight particular life skills that young people are purported to develop through sport.

The eight life skills included in the scale were teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. Supporting the inclusion of these life skills was a study which reviewed the assets that young people learn through sport (Johnston et al., 2013). This study cited these skills as the most frequently reported life skills that young people develop through sport. Specifically, content analysis of 34 key papers in the area of positive youth development through sport found that these life skills were cited a total of 95 times across these publications (Johnston et al., 2013). The exact breakdown of the number of citations was as follows: goal setting (21), teamwork (15), problem solving and decision making (14), leadership (12), interpersonal communication (10), emotional skills (9), social skills (9), and time management (9). Other life skills that were cited frequently but were not included within the scale were self-esteem/confidence and motivation/effort. Both self-esteem/confidence and motivation/effort were not included as existing measures are available to assess these constructs. For example, the Rosenberg self-esteem scale

(Rosenberg, 1965) has long been used to assess self-esteem and motivation is often measured using the Sport Motivation Scale (Pelletier et al., 1995). Below, each life skill is defined and an explanation of its importance to youth development is provided.

Definitions and Importance

Teamwork has been defined as "people working together to achieve something beyond the capabilities of individuals working alone" (Marks, Mathieu, & Zaccaro, 2001, p. 356). Teamwork is an important life skill because many modern tasks exceed the capabilities of a single individual and therefore require a team of individuals to carry out the task (Salas, Dickinson, Converse, & Tannenbaum, 1992). For instance, many businesses use specialised teams to carry out particular tasks (e.g., sales, marketing, and customer service teams). Due to the increasing use of teams within the workforce, young people are being increasingly encouraged to obtain the teamwork skills that employers expect (Kagan, 1998).

Goal setting is "the process by which people establish desirable objectives for their actions" (Moran, 2004, p. 55). According to Locke and Latham (2002), goal setting has been shown to increase performance on over 100 different tasks involving more than 40,000 participants. Thus, goal setting is a valuable life skill that allows young people to improve their performance in a variety of activities ranging from workplace productivity (Locke & Latham, 1984) to sport and exercise (Burton et al., 2001).

Time management is defined as "behaviours that aim at achieving an effective use of time while performing certain goal-directed activities" (Claessens, van Eerde, Rutte, & Roe, 2007, p. 262). Mastering time management skills allows young people to thrive in several domains. For example, research has shown that time management skills relate

positively to academic achievement (Britton & Tesser, 1991), work/life satisfaction (Macan, Shahani, Dipboye, & Peek-Phillips, 1990), and overall health (Claessens et al., 2007).

Emotional skills have not been well defined within the literature (Humphrey et al., 2011), whereas the related construct of emotional intelligence has been defined extensively. Therefore, a definition of emotional intelligence was used. Emotional intelligence is "the processes involved in the recognition, use, understanding, and management of one's own and others emotional states" (Salovey, Brackett, & Mayer, 2004, p. i). The importance of emotional intelligence has been highlighted through the work of Goleman (2005), who proposed that emotional intelligence is as vital as traditional forms of intelligence such as IQ. Research suggests that emotional skills are important as they promote young peoples' psychological well-being, adjustment, and academic achievement (Humphrey et al., 2011).

Interpersonal communication is "the process by which people exchange information, feelings, and meaning through verbal and non-verbal messages: it is face-to-face communication" (Interpersonal Communication Skills, 2011). Interpersonal communication is necessary in all aspects of our lives and good interpersonal communication skills allow us to communicate effectively with people we encounter in various settings. The importance of interpersonal communication is highlighted by Rubin and Morreale (1996) who found that communication skills are related to both academic and professional success for students.

Social skills are the "learned behaviours that allow one to interact and function effectively in a variety of social contexts" (Sheridan & Walker, 1999, p. 687). According

to Matson et al. (2010), the development of social skills is essential for relationship development and social acceptance throughout one's life. In contrast, problems in social skills result in a wide range of problems throughout one's life including difficulties in relationships and deviancy during adolescence (Matson et al., 2010). Therefore, the promotion of social skills in young people is important for their overall development.

Leadership is the "process whereby an individual influences a group of individuals to achieve a common goal" (Northouse, 2010, p. 3). Many modern organisations view leadership as a competitive advantage and are investing in its development accordingly (McCall, 1998). One particular emphasis has been on developing leadership capacity in all employees – not just supervisors, managers, and senior executives (Day, 2001). Consequently, the leadership skills that young people develop will prove valuable when they enter the workforce. Furthermore, leadership skills should allow young people to contribute to their community by leading others in activities such as sports, enterprise, and politics.

Problem-solving is defined as "the activities by which a person attempts to understand problems in everyday living and to discover effective solutions" (D'Zurilla & Nezu, 2010, p. 200). Decision making is choosing between more than one option or alternative (Peters, Finucane, MacGregor, & Slovic, 2000). Both problem solving and decision making are closely related constructs which are often combined (Thornton & Dumke, 2005). Problem solving is an important skill as it is positively related to physical health (Elliott & Marmarosh, 1994), career progression (Heppner & Krieshok, 1983), and academic performance (Elliott et al., 1990). Decision making is important because young

people will be required to make challenging decisions throughout their lives (e.g., where to go to university, what career to choose, who to marry, and where to live).

In summary, these eight life skills are important for young peoples' development and future success. However, there is presently no suitable measure to accurately assess the development of these life skills through sport. The next phase of this programme of research involved developing and validating a life skills scale for sport which measures teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. Developing this scale will allow researchers and practitioners to accurately assess whether young people are learning these life skills through sport and pave the way for future research concerned with both the antecedents and consequences of life skills development through sport. This scale will also allow researchers and practitioners to accurately assess the effectiveness of sports programmes designed to teach life skills (e.g., SUPER, First Tee, and Living for Sport).

Outline of the Scale Development and Validation Studies

Four separate studies were conducted to develop a life skills scale for sport. Following on from Study 1, these studies were titled Studies 2–5. Each of these studies sought to assess various elements of both validity and reliability evidence. Study 2 involved developing items for the initial scale and assessing content validity. Study 3 sought to reduce the number of items in the scale and test the factor structure of the eight subscales using EFA. Study 4 assessed the factor structure of each subscale and the whole scale via CFA. Study 5 assessed the test-retest reliability of the scale.

Study 2 – Purpose and Overview

The purpose of this study was to develop a scale to measure life skills development through sport. This involved defining each of the eight life skills, selecting components which best represented each life skill, and developing items to assess each life skill. During this lengthy process, a wide range of literature relating to each life skill was consulted. After developing an initial item pool, academics with expertise in each particular life skill reviewed all items. Based on these experts' ratings, items were selected for the initial scale.

Method and Results

Before constructing a scale to represent each life skill, it was important to carry out two preliminary tasks. First, I needed to clarify the conceptual definition of each life skill. Second, I had to identify the components which are representative of each life skill. To help with these two tasks, the literature on each particular life skill was reviewed. This meant exploring the literature for definitions of the life skill, components of the life skill, and possible measures of the life skill.

It was important to select definitions and components that represented the breadth of each life skill. As Hinkin (1995) stated: "any measure must adequately capture the specific domain of interest yet contain no extraneous content" (p. 969). This process was particularly important for content validity, as underrepresentation of a life skill during the scale development phase is of greater concern than overrepresentation. An overrepresented list of items can be whittled down by reviewers during the content validity stage, whereas it would be more difficult to add items after the expert review process. Consequently, it is important to acknowledge my desire to retain rather than restrict components during the

initial stages of scale development. Another consideration was that definitions and components of the life skill were appropriate for youth sport. As Hanbury and Malti (2011) suggest, it is important to develop life skills measures that are particular to and relevant for a specific context. Finally, the decision was taken to exclude components that overlapped with other life skills or components that were clearly not skills. For example, it is debatable whether optimism should be classified as an emotional skill as suggested by Lane et al. (2009), or an innate trait as Carver, Scheier, and Segerstrom (2010) maintain. Therefore, optimism was excluded as a component of emotional skills.

The next section outlines the main definitions of the eight life skills, the components of the life skills which others have identified, and useful measures of each life skill. As very few measures have been developed to assess the learning of life skills through sport, measures from mainstream psychology, other psychological disciplines such as organisational psychology, and the field of youth development were consulted. Due to space limitations, only the most prominent definitions, components and measures are discussed.

Clarifying Conceptual Definitions and Components

Teamwork. Teamwork has been defined as the ability of team members to work together, anticipate each other's needs, inspire confidence, and communicate effectively (Siskel & Flexman, 1962). Others view teamwork as "people working together to achieve something beyond the capabilities of individuals working alone" (Marks et al., 2001, p. 356). Within sport, Veach and May (2005) defined teamwork as "cooperative or coordinated effort on the part of a group of persons acting together as a team or in the interests of a common cause" (p. 171). All these definitions share the idea of people

working together and the final two definitions suggest that teamwork involves working toward "a common cause". I adopted Marks and colleagues (2001) definition as it included the two key elements of teamwork (i.e., working together and working toward something). I also felt that this definition was broad enough to allow for the inclusion of several teamwork components. In contrast, Veach and May's (2005) use of the phrasing "cooperative or coordinated effort" limited the inclusion of other teamwork components which did not involve cooperation or coordination (e.g., promoting team spirit or morale).

Despite an array of teamwork components being identified in various fields, there is a lack of consensus about the fundamental components of teamwork (Valentine, Nembhard, & Edmondson, 2012). In sport, Yukelson, Weinberg, and Jackson (1984) proposed that the quality of teamwork includes role compatibility, support and mutual respect, unselfishness and sacrifice behaviour, conflict resolution, closeness, well defined roles, and team task discipline. However, these components clearly describe the characteristics of teamwork as opposed to teamwork skills. It would be difficult to argue that closeness, unselfishness, or well defined roles meet the definition of life skills adopted for this study (i.e., skills that are required to deal with the demands and challenges of everyday life). Therefore, teamwork components identified in other research fields were consulted. Within the military, Morgan, Glickman, Woodward, Blaiwes, and Salas (1986) identified the following components of teamwork: providing suggestions or criticisms, accepting suggestions or criticisms, cooperation, coordination, team spirit and morale, and adaptability. These components were originally identified as important for U.S. Naval teams and later supported by a number of teamwork researchers in other settings (Brannick, Roach, & Salas, 1991; Oser, McCallum, Salas, & Morgan, 1989). Some components seem

to overlap with Yukelson and colleagues (1984) qualities of teamwork for sport. Team spirit is similar to closeness, and coordination overlaps with role compatibility and well defined roles. An advantage of Morgan et al.'s (1986) conceptualisation is that all components can be classified as skills (with the exception of team spirit and morale). Nonetheless, promoting team spirit and morale could be described as a skill. Thus, I adopted Morgan and colleagues (1986) components when developing items that would comprise teamwork skills.

Given the importance of teamwork in sport, it is surprising that no real measure of teamwork exists within sport. The lack of teamwork measures is not limited to sport as Salas, Cooke, and Rosen (2008) suggest that measures of teamwork are needed across various fields. In sport, teamwork has generally been viewed as akin to team cohesion (Barker, Rossi, & Pühse, 2010), with the most popular measure of cohesion being the Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985). The GEQ is a good measure of task and social cohesion, but teamwork incorporates a great deal more than these two aspects. In business, Hoegl and Gemuenden (2001) have created a measure of teamwork quality involving communication, coordination, balance of member contributions, mutual support, effort, and cohesion. Although this measure contains some items which could be adapted to sport, the components were less suited to sport than the components I adopted from Morgan and colleagues (1986). For example, neither 'providing suggestions or criticism' nor 'adaptability' was dealt with in Hoegl and Gemuenden's (2001) measure. Both of these components are important aspects of teamwork in sport. Due to the lack of comprehensive teamwork measures, it was necessary to consult a wide variety of literature when developing items to represent each of the six

teamwork components. In total, four teamwork surveys and nine sources (i.e., book chapters and journal articles) were used when generating items to represent each teamwork component (see Tables 3 and 4 on pages 118–122). Please note that these were the final sources used to generate items; a far wider array of literature was consulted during the overall process. The same was also true for the life skills which follow.

Goal Setting. Goal setting is "the process of establishing a level of performance proficiency which should be reached within a prescribed time period" (Cashmore, 2008, p. 200). Similarly, Moran (2004) defined goal setting as "the process by which people establish desirable objectives for their actions" (p. 55). Locke and Latham (2002), who are the foremost goal setting researchers, state that a goal "is the object or aim of an action, for example, to attain a specific standard or proficiency, usually within a specified time limit" (p. 705). After reviewing these definitions, I decided to adopt Moran's (2004) definition for two reasons. It is a specific definition of goal setting, as opposed to Locke and Latham's (2002) definition of a goal. Unlike Cashmore's (2008) definition, it does not limit itself to performance goals. This was an important consideration as performance goals are only one of many types of goals used within sport (e.g., process and outcome goals).

The second task was to explore the key components of goal setting. One commonly used goal setting template is SMART. This easy to remember acronym advises sports participants to set specific, measurable, action oriented, realistic, and timely goals (Bull, Albinson, & Shambrook, 1996). However, one could argue that the process of goal setting is broader than these five components. For example, Cox (2012) recently outlined various principles of effective goal setting including: make goals specific and measurable; identify

time constraints; use moderately difficult goals; write goals down and monitor progress; use a mix of process, performance, and outcome goals; use short-range goals to achieve long-range goals; set goals for practice and competition; and make sure goals are internalised by the athlete. These principles or components are far broader than the components represented by SMART. It is also important to point out that the skill aspect of goal setting is using the different types of goals. For instance, specific and measurable goals are types of goals, whereas using specific and measurable goals is a skill in itself. In sum, Cox's (2012) components were adopted when developing items to assess goal setting skills.

Within sport, there are only a few measures that can assess goal setting skills. One such measure is the goal setting subscale of the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999). This subscale assesses specific goals, realistic and challenging goals, practice and competition goals, performance goals, and goal evaluation. Another goal setting measure is the goal setting and mental preparation subscale of the Athletic Coping Skills Inventory (Smith, Smoll, Schutz, & Ptacek, 1995). This subscale measures specific goals, planning to reach goals, and performance goals. Like the SMART template, the above measures only assess some of the components of goal setting. As a result, it was necessary to find and create items that assessed all the components of goal setting identified by Cox (2012). Two goal setting surveys and three sources were used to develop goal setting items (see Tables 3 and 4 on pages 118–122).

Time Management. The definition most appropriate for the construct of time management was "behaviours that aim at achieving an effective use of time while performing certain goal-directed activities" (Claessens et al., 2007, p. 262). This definition

was developed after these researchers reviewed the time management literature and identified a multitude of time management definitions. For instance, they cited Eilam and Aharon (2003) who viewed time management as a way of monitoring and controlling time. They also referenced Lakein (1973) who suggested that time management involves the process of determining needs, setting goals to achieve these needs, prioritising, and planning tasks to achieve these goals. Claessens and colleagues (2007) felt their own definition was sufficiently broad to cover time management skills in their entirety. This fitted well with the purpose of the present research, which was to create a time management subscale that covered the full range of time management skills.

Time management systems in the United Kingdom and America identify the following as important time management skills: "control of time through developing goals, prioritising assignments, planning and scheduling time, and avoiding interruptions and distractions" (Lang, 1992, p. 169). In his review of the time management literature, Richards (1987) suggested that time management involves grouping demands together, concentrating on priorities, work scheduling, and delegation. All of the above components focus on the planning and mechanics aspects of time management, whereas other researchers suggest there is more to time management. Claessens et al. (2007) identified three components of time management: time assessment (which involves an awareness of the past, present and future, along with self-awareness of one's use of time); planning (which relates to setting goals, planning tasks, prioritising, making to-do lists, and grouping tasks to make effective use of time); and monitoring (which involves observing one's use of time and limiting the influence of interruptions). These components were adopted when developing items to assess time management skills. Including these three components, as

opposed to the two components (i.e., planning and mechanics) identified by other researchers, allowed for time management skills to be covered in their entirety.

The most widely used measures of time management are the Time Structure Questionnaire (Bond & Feather, 1988), the Time Management Questionnaire (Britton & Tesser, 1991), and the Time Management Behaviour Scale (Macan et al., 1990). The Time Structure Questionnaire measures sense of purpose, structured routine, present orientation, effective organisation, and persistence. The Time Management Questionnaire measures short range planning, long range planning, and time attitudes. The components included in the Time Management Behaviour Scale are setting goals and priorities, mechanics and planning, perceived control of time, and organisation. As no one scale covered the three components of time management I had adopted, all three measures and additional time management literature was consulted when developing items to assess time management skills. Overall, four time management surveys and three journal articles were used (see Tables 3 and 4 on pages 118–122).

Emotional Skills. Within the research literature, it is nigh impossible to find a definition of emotional skills. This is probably due to the amount of terms used to describe emotional skills. Some researchers refer to emotional competence (Lau & Wu, 2012), others to emotional intelligence (Salovey et al., 2004), and still others to social and emotional skills combined (Wigelsworth, Humphrey, Kalambouka, & Lendrum, 2010). As emotional skills have not been well defined within the literature (Humphrey et al., 2011), definitions of the much researched construct of emotional intelligence were examined. This decision was strengthened by the contention that the theory of emotional intelligence

provides a useful framework for emotion related research in sport (Latimer, Rench, & Brackett, 2007).

Mayer and Salovey (1997) defined emotional intelligence as an individual's ability to process emotion related information in order to enhance cognitive processes and facilitate social functioning. Another definition comes from Bar-On (1997) who viewed emotional intelligence as "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (p. 14). A major flaw with this definition is its failure to mention emotions, as one could argue that "coping with environmental demands and pressures" is distinct from coping with one's emotions. A later definition proposed by Salovey et al. (2004) viewed emotional intelligence as "the processes involved in the recognition, use, understanding, and management of one's own and others' emotional states" (p. i). This definition was adopted as it covers emotions specifically and incorporates a central aspect of emotional intelligence – that it is concerned with one's own emotions and the emotions of others (Gignac, Palmer, Manocha, & Stough, 2005).

Originally, Salovey and Mayer (1990) suggested that emotional intelligence involved knowing one's emotions, knowing others emotions, handling one's emotions, and handling others emotions. Later, these authors amended their original components and proposed a four branch model of emotional intelligence which included: (1) perception, appraisal, and expression of emotions; (2) the emotional facilitation of thinking; (3) understanding and analysing emotions and employing knowledge; and (4) the regulation of emotions (Mayer & Salovey, 1997). In sport, Latimer and colleagues (2007) proposed four emotion-related skills: perception of emotions, use of emotions, understanding of emotions,

and management of emotions. These four skills can refer to one's own and others emotions, which fits with the definition of emotional skills I chose. Therefore, these four components were adopted.

A frequently used measure of emotional intelligence is the Bar-On Emotional Quotient Inventory: Youth Version (Bar-On & Parker, 2008). This inventory measures intrapersonal emotional intelligence, interpersonal emotional intelligence, stress management, adaptability, positive impression, and general mood. A problem with this inventory is that stress management, adaptability, and forming a positive impression could be viewed as separate skills altogether, and general mood could be viewed as a trait rather than a skill (Carver et al., 2010). Conceptualising emotional skills too broadly is a criticism that other researchers have levelled at emotion-related research (Wigelsworth et al., 2010). Another measure of emotional intelligence is the Emotional Intelligence Scale (Schutte et al., 1998). Using this scale, Lane and colleagues (2009) found support for six components of emotional intelligence in an athletic sample. These components included appraisal of others emotions, appraisal of own emotions, regulation of emotions, social skills, utilisation of emotions, and optimism. However, like Carver and colleagues (2010), I view optimism as a trait rather than a skill and believe social skills are a separate skill as opposed to an emotional skill. The last measure I examined was the Workgroup Emotional Intelligence Profile (Jordan & Lawrence, 2009) which measures awareness of own emotions, management of own emotions, awareness of others emotions, and management of others emotions. Although this measure covers Latimer et al.'s (2007) 'perceive' and 'manage' components of emotions, it fails to cover both 'use' and 'understanding' of emotions. This was a common failing of the above measures; they covered some but not

all the components of emotional intelligence I had adopted. For this reason, I chose to use all of the above measures when developing emotional skills items.

Despite using emotional intelligence research to develop the emotional skills scale, I still viewed emotional skills as a better term. Emotional skills fitted well with the aim of creating a life skills survey. Also, as highlighted earlier, the term skills is very familiar to sportspeople who view skills as something they can learn and improve. This aligned with the purpose of the scale, which was focused on life skills development through youth sport. In total, four emotional skills surveys and two journal articles were used when generating items to represent emotional skills (see Tables 3 and 4 on pages 118–122).

Interpersonal Communication. Interpersonal communication has been defined as "selective, systemic, unique, processual (is an ongoing process) transactions that allow people to reflect and build personal knowledge of one another and create shared meanings" (Wood, 2010, p. 21). A problem with this definition is that it incorporates multiple methods of communication (e.g., text messaging, skyping, etc.). These broad methods of communication did not fit with the aim of assessing the development of interpersonal communication skills through sport. Therefore, a different definition of interpersonal communication was chosen: "the process by which people exchange information, feelings, and meaning through verbal and non-verbal messages: it is face-to-face communication" (Interpersonal Communication Skills, 2011). This definition was chosen as it limited interpersonal communication to face-to-face verbal and non-verbal communication. This is the specific type of communication that takes place within sport (i.e., on the playing field or court), although I do acknowledge that young people communicate in a variety of ways when away from the sporting environment (e.g., instant messaging, snapchat, etc.). In

contrast to Wood's (2010) definition, this definition included both verbal and non-verbal communication. This was important as researchers propose that non-verbal communication is vital to imparting and receiving information (Weinberg & Gould, 2007).

Bienvenu (1969) stated that being an effective communicator involves five interpersonal skills: an adequate self-concept, being a good listener, the skill of expressing one's thoughts and ideas clearly, coping with and expressing emotions in a constructive way, and the willingness to disclose oneself to others. A problem with Bienvenu's (1969) interpersonal skills is the fact that self-concept is normally viewed as a separate construct (Marsh, 1990) and expressing one's emotions could be viewed as an emotional skill. One could also argue that there are other skills that comprise interpersonal communication. For example, the U.S. National Communication Association identified numerous communication skills including: recognising when it is appropriate to speak, speaking clearly and expressively, presenting ideas in an organised manner, listening attentively, using the most effective medium for communication, structuring a message appropriately, identifying how receptive others are to a message, and giving information which is supported with examples (Dunbar, Brooks, & Kubicka-Miller, 2006). The above research provides for a broad list of communication skills. Two skills cited repeatedly were speaking clearly and listening attentively. These two components were deemed as essential components of interpersonal communication. The absence of non-verbal communication was a concern as research by Henry, Reed, and McAllister (1995) highlighted the importance of non-verbal communication skills (e.g., eye contact and non-verbal comprehension) for forming adolescent relationships. Therefore, the components of

interpersonal communication adopted were speaking, listening, and non-verbal communication.

One measure of interpersonal communication is the Interpersonal Communication Skills Inventory which measures sending clear messages, listening, giving and receiving feedback, and handling emotional interactions (Learning Dynamics, 2002). A second measure of interpersonal communication is the Interpersonal Communication Inventory (Bienvenu, 1969) which assesses self-concept, listening, clarity of expression, difficulties in coping with angry feelings, and self-disclosure. The above scales deal with speaking and listening skills, but neither assesses non-verbal communication. For that reason, additional measures which assessed non-verbal communication were consulted (e.g., the Communication Self-Evaluation Scale; Weinberg & Gould, 2007). All of the above measures and additional literature were utilised to develop items to adequately assess interpersonal communication skills. Overall, four interpersonal communication surveys and three sources of literature were used (see Tables 3 and 4 on pages 118–122).

Social Skills. According to Humphrey and colleagues (2011), social skills have not been well defined within the research literature. Nonetheless, after reviewing the social skills literature, I selected a few promising definitions. One definition stated that social skills comprise "the ability to interact with others in a given social context in specific ways that are socially accepted or valid" (Combs & Slaby, 1977, p. 162). A similar definition is that of social competence which involves the degree to which young people engage in prosocial behaviours and are able to successfully establish and maintain positive social interactions (Anderson-Butcher, Iachini, & Amorose, 2007). Others view social skills as "learned behaviours that allow one to interact and function effectively in a variety of social

contexts" (Sheridan & Walker, 1999, p. 687). This definition was chosen for two reasons. Firstly, it focuses specifically on social skills as opposed to Anderson-Butcher and colleagues (2008) definition which mentions the separate area of prosocial behaviours. Secondly, a limitation with Combs and Slaby's (1977) definition was the phrasing "ways that are socially accepted or valid", because what is socially accepted or valid depends greatly on the culture or situation.

The following social skill components were identified by Petrides and Furnham (2000): adaptability, low impulsiveness, self-esteem, self-motivation, stress management, trait happiness, trait optimism, assertiveness, relationship skills, social competence, and trait empathy. Caldarella and Merrell (1997) identified peer relations, self-management, academic skills, compliance skills, and assertion skills as common dimensions of social skills. A problem with the above components is that some are separate skills altogether (e.g., academic skills) and others are traits (e.g., trait optimism). Due to these problems and difficulties with other researchers' components of social skills, existing social skills measures were consulted to see whether they could provide adequate components of social skills.

Unfortunately, no real 'gold standard' measure of social skills exists (Wigelsworth et al., 2010). However, Riggio (1986) did identify seven components for his Social Skills Inventory: emotional expressivity, emotional sensitivity, emotional control, social expressivity, social sensitivity, social control, and social manipulation. Given that I planned to measure emotional skills in a separate subscale, I felt that these components were not appropriate. Instead, I adopted the five components from the Adolescent Social Self-Efficacy Scale (Connolly, 1989) and the Scale of Perceived Social Self-Efficacy

(Smith & Betz, 2000). These scales are related as one was used to develop the other and both measure social assertiveness, performance in public situations, participation in social groups, friendship and intimacy, and giving or receiving help. Importantly, these components have been highlighted as social situations which teenagers view as important (Ford, 1982). The definition of social skills I adopted accounts for learned behaviours related to effective functioning in social contexts, as opposed to traits (e.g., optimism) and skills related to other contexts (e.g., academic skills). Thus, the components adopted all fit with such a definition. This narrows down the construct of social skills compared to the array of components identified by some researchers (e.g., Petrides & Furnham, 2000). This was important as previously an enormous variety of skills have been wrongly labelled as social skills (Riggio, 1986). When generating items to represent the components of social skills, six social skills surveys and two journal articles were used (see Tables 3 and 4 on pages 118–122).

Leadership. Leadership has been defined as the "process whereby an individual influences a group of individuals to achieve a common goal" (Northouse, 2010, p. 3). Cashmore (2008) suggested that leadership is "the deployment of power, authority or influence to guide others' thought and/or behaviour and induce them to follow, willingly or not" (p. 246). Athlete leadership has been defined as "an athlete occupying a formal role within a team, who influences team members to achieve a common goal" (Loughead, Hardy, & Eys, 2006, p. 144). There were noticeable problems with the last two definitions. The inclusion of power and authority along with "induce them to follow, willingly or not" in Cashmore's (2008) definition makes leadership sound coercive and authoritarian. This does not sit well with more modern and democratic theories of leadership (e.g.,

transformational leadership). Loughead and colleagues (2006) definition only allowed for leadership by those occupying a "formal role within a team", whereas other researchers suggest that leadership roles can come without formal authority (Day, 2001). For example, all players on a rugby team, not just the team captain, can assume leadership roles. Thus, Northouse's (2010) definition of leadership was adopted as it avoided authoritarian language and allowed for both formal and informal leadership.

Successful leadership requires a variety of skills. Wright and Côté (2003) suggested that youth leadership involves excellent sport-specific skills, enriched cognitive sport knowledge, strong work ethic, and good rapport with people. Nonetheless, one could argue that sport-specific skills and cognitive sport knowledge are not really leadership skills per se. Later research by Dupuis, Bloom, and Loughead (2006) found that university ice hockey captains reported three general categories of leadership behaviours: interpersonal characteristics, verbal interactions, and task behaviours. However, leadership skills are a lot broader and more specific than these three categories. In this regard, I found transformational leadership to be an adequate representation of leadership skills. Transformational leadership involves individual consideration, inspirational motivation, intellectual stimulation, fostering acceptance of team goals and promoting teamwork, high performance expectations, appropriate role modelling, and contingent reward (Callow, Smith, Hardy, Arthur, & Hardy, 2009). Transformational leadership is currently one of the most popular leadership theories and these behaviours provide a useful set of skills that young people need to become effective leaders (Gould & Voelker, 2012). Therefore, the seven transformational leadership skills were adopted for developing the leadership skills subscale.

The only measure of transformational leadership specific to sport is the Differentiated Transformational Leadership Inventory for Sport (Callow et al., 2009). This 27-item measure assesses the seven transformational leadership behaviours listed previously and was used to develop items to assess leadership skills. In practical terms, this meant re-wording some items to assess the learning of leadership skills through youth sport. This was necessary as the scale was designed to assess the transformational leadership behaviours of adult coaches, not the leadership skills participants learn through sport. A small amount of research has actually investigated the specific leadership skills young people learn through sport (e.g., Gould & Voelker, 2012). Thus, I also consulted literature on youth leadership in order to develop additional items. Overall, three leadership surveys and six journal articles were used to develop items (see Tables 3 and 4 on pages 118–122).

Problem Solving and Decision Making. Problem solving skills are "the activities by which a person attempts to understand problems in everyday living and to discover effective solutions" (D'Zurilla & Nezu, 2010, p. 200). Problem solving has also been defined as finding the best way to overcome a difficulty (Morgan, King, Weisz, & Schopler, 2004). I selected the first definition as it specifies problems that occur in "everyday life" and thus eliminates other types of problem solving (e.g., mathematical or logical problem solving). I adopted the following definition of decision making: choosing between more than one option or alternative (Peters et al., 2000). Both of these definitions were chosen because they are relatively broad, which allowed for the full exploration of problem solving and decision making skills.

Heppner and Peterson (1982) have described five stages of problem solving: general orientation, problem definition, generation of alternatives, decision making, and evaluation. These stages – which include decision making – are common to most models of problem solving. For instance, D'Zurilla & Goldfried (1971) have outlined four similar problem solving skills: problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification. I adopted D'Zurilla and Goldfried's (1971) four components to represent problem solving and decision making skills.

Two measures of problem solving and decision making are the Personal Problem Solving Inventory (Heppner & Petersen, 1982) and the Problem Solving Skills Scale (D'Zurilla & Nezu, 1990). The Personal Problem Solving Inventory measures problem solving confidence, approach-avoidance style, and personal control; whereas, the Problem Solving Skills Scale measures problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification. As it measured the four components I had adopted, the Problem Solving Skills Scale was used when creating items to represent problem solving and decision making skills. To ensure adequate content coverage, I also consulted other measures and literature on problem solving and decision making skills. In total, four measures and two journal articles were used to generate items (see Tables 3 and 4 on pages 118–122).

Global Indicators of Life Skills

Along with assessing particular components of a life skill, each life skill could be assessed using a global item. For example, although interpersonal communication involves speaking, listening, and non-verbal communication skills, one could also assess

Table 3
Surveys Used for Generating Items

Measure	Developer/s	Year
Life skills		
Life Skills Evaluation System	Bailey, S. J., & Deen, M. Y.	2002
Youth Program Quality Instrument	Borden, L., Wiggs, C., & Schaller, A.	2010
Life-Skills Development Scale-Adolescent Form	Darden, C. A., Ginter, E. J., & Gazda, G. M.	1996
Life Skills Self-Beliefs	Goudas, M., Karabekou, A., & Papacharisis, V.	2007
The Youth Experiences Survey 2.0	Hansen, D. M., & Larson, R.	2005
Functional Transferrable Skills Inventory	Knox, D.	2013
Skills for Everyday Living	Perkins, D. F., & Mincemoyer, C. C.	2003
Teamwork		
The Group Environment Questionnaire	Carron, A. V., Widmeyer, W. N., & Brawley, L. R.	1985
Teamwork – Knowledge, Skills, & Abilities Test	Stevens, M. J., & Campion, M. A.	1994
Peer and Self-Evaluation System	Strom, P. S., Strom, R. D., & Moore, E. G.	1999
Sport Cohesion Instrument	Yukelson, D., Weinberg, R., & Jackson, A.	1984
Goal setting		
Achieving Goals Survey	Barkman, S. J., & Machtmes, K.	2002a
Test of Performance Strategies	Thomas, P. R., Murphy, S. M., & Hardy, L.	1999
Time management		
Time Structure Questionnaire	Bond, M. J., & Feather, N. T.	1988
Time-Management Questionnaire	Britton, B. K., & Tesser, A.	1991
Time Management Coping Scale	Lang, D.	1992
Time Management Behavior Scale	Macan, T. H., Shahani, C., Dipboye, R. L., & Phillips, A. P.	1990
Emotional skills		
Emotional Quotient Inventory	Bar-On, R.	1997
Workgroup Emotional Intelligence Profile – Short Form	Jordan, P. J., & Lawrence, S. J.	2009
Emotional Aspects Related to Sports Performance	Knobel, D. P.	2010

Emotional Intelligence Scale	Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T…Dornheim, L.	1998
Interpersonal communication		
Communicating Scale	Barkman, S. J., & Machtmes, K.	2002b
Interpersonal Communication Inventory	Bienvenu, M. J.	1971
Interpersonal Communication Competence Scale	Rubin, R. B., & Martin, M. M.	1994
Communicative Competence Scale	Wiemann, J. M.	1977
Social skills		
Adolescent Social Self-Efficacy Scale	Connolly, J.	1989
Perceived Social Competence Scale	Harter, S.	1982
Teenage Inventory of Social Skills	Inderbitzen, H. M., & Foster, S. L.	1992
Matson Evaluation of Social Skills with Youngsters	Matson, J. L., Neal, D., Fodstad, J. C., Hess, J. A., Mahan, S., & Rivet, T. T.	2010
Social Self-Efficacy Scale	Muris, P.	2001
Quality of Youth Sport Friendships	Weiss, M. R., & Smith, A. L.	1999
Leadership		
Leadership Survey	Barkman, S. J., Mincemoyer, C. C., & Perkins, D. F.	2005
Differentiated Transformational Leadership Inventory for Sport	Callow, N., Smith, M., Hardy, L., Arthur, C., & Hardy, J.	2009
Youth Leadership Life Skills Development Scale	Seevers, B. S., Dormody, T. J., & Clason, D. L.	1995
Problem solving and decision making		
Social Problem-Solving Inventory	D'Zurilla, T. J., & Nezu, A. M.	1990
Personal Problem-Solving Inventory	Heppner, P. P., & Petersen, C. H.	1982
Making Decisions in Everyday Life	Mincemoyer, C. C., Perkins, D. F., & Munyua, C.	2001b
Critical Thinking in Everyday Life	Mincemoyer, C. C., Perkins, D. F., & Munyua, C.	2001a

Note. This is not an exhaustive list of the surveys that were consulted. These are the surveys that contained items that were used or modified for the initial scale. Full references for each survey are contained within the reference list.

Table 4
Literature Used for Generating Items

Title of source	Author/s	Year
Life skills		
A developmental-educational intervention model of sport psychology	Danish, S. J., Petitpas, A. J., & Hale, B. D.	1992
Life skills in children of incarcerated fathers	Dunn, E., & Arbuckle, J. G.	2003
Monitoring and evaluating life skills for youth development	Hanbury, C., & Malti, T.	2011
Teamwork		
A method for measuring team skills	Annett, J., Cunningham, D., & Mathias-Jones, P.	2000
Principles for measuring teamwork skills	Baker, D. P., & Salas, E.	1992
Group dynamics in sport	Carron, A. V., Hausenblas, H. A., & Eys, M. A.	2005
Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence	Hoegl, M., & Gemuenden, H. G.	2001
A temporally based framework and taxonomy of team processes	Marks, M. A., Mathieu, J. E., & Zaccaro, S. J.	2001
Measurement of team behaviors in a navy training environment	Morgan, B. B., Glickman, A. S., Woodard, E. A., Blaiwes, A., & Salas, E.	1987
Teamwork in multi-person systems: A review and analysis	Paris, C. R., Salas, E., & Cannon-Bowers, J. A.	2000
Is there a “big five” in teamwork?	Salas, E., Sims, D. A., & Burke, C. S.	2005
Teamwork: For the good of the whole	Veach, T. L., & May, J. R.	2005
Goal setting		
Goal setting in sport	Cox, R. H.	2012
Goals setting and performance in sport and exercise settings: A synthesis and critique	Weinberg, R. S.	1994
Building a practically useful theory of goal setting and task motivation	Locke, E. A., & Latham, G. P.	2002
Time management		
A review of the time management literature	Claessens, B. J., van Eerde, W., Rutte, C. G., & Roe, R. A.	2007
Students planning in the process of self-regulated learning	Eilam, B., & Aharon, I.	2003

Time management – a review	Richards, J. H.	1987
Emotional skills		
Emotional intelligence – A framework for examining emotions in sport and exercise groups	Latimer, A. E., Rench, T. A., & Brackett, M. A.	2007
What works in developing children's emotional and social competence and wellbeing?	Weare, K., & Gray, G.	2003
Interpersonal communication		
Oral communication skills in higher education: Using a performance-based evaluation rubric to assess communication skills	Dunbar, N. E., Brooks, C. F., & Kubicka-Miller, T.	2006
Adolescents' perceptions of the relative importance of selected communication skills in their positive peer relationships.	Henry, F. M., Reed, V. A., & McAllister, L. L.	1995
Communication	Weinberg, R. S., & Gould, D.	2007
Social skills		
Common dimensions of social skills of children and adolescents: A taxonomy of positive behaviors	Caldarella, P., & Merrell, K. W.	1997
A contextualized framework for social skills assessment, intervention, and generalization	Sheridan, S. M., Hungelmann, A., & Maughan, D. P.	1999
Leadership		
Leadership development: A review in context	Day, D. V.	2001
Enhancing youth leadership through sport and physical education	Gould, D., & Voelker, D. K.	2012
Leadership skills: Conclusions and future directions	Mumford, M. D., Zaccaro, S. J., Connelly, M. S., & Marks., M. A.	2000
Leadership: Theory and practice	Northouse, P. G.	2010
Understanding the experience of high school sport captains	Voelker, D. K., Gould, D., & Crawford, M. J.	2011
A retrospective analysis of leadership development through sport	Wright, A., & Côté, J.	2003

Problem solving and decision making		
Enhancing decisions and decision-making processes through the application of emotional intelligence skills	Hess, J. D., & Bacigalupo, A. C.	2011
Age differences in everyday problem-solving and decision-making effectiveness: A meta-analytic review	Thornton, W. J., & Dumke, H. A.	2005

Note. This is not an exhaustive list of the sources that were consulted. These are the sources that were used to generate original items. Full references for each source are contained within the reference list.

interpersonal communication using a global item (e.g., to communicate well with others). Therefore, global items were also developed for each of the life skills. This was in line with the advice of MacKenzie and colleagues (2011) who recommended including a global item to assess a particular construct. The main benefit of including a global item is a reduction in the likelihood of interpretational confounding (Jarvis, MacKenzie, & Podsakoff, 2003). Interpretational confounding is a problem arising from a discrepancy between the nominal meaning of a construct based on its conceptualisation and the empirical meaning of a construct based on its operationalization (Anderson & Gerbing, 1988; Burt, 1976). Thus, using a global item may help participants to better understand the construct being assessed.

Item Selection and Development

After defining each life skill and deciding on the components that represent each life skill, it was necessary to develop items that would assess the eight life skills. This involved examining the applicability of items from sport and non-sport measures that have been used to assess the life skills. Only items applicable to youth sport were selected, as it is important to develop items which are understood by the population of interest (MacKenzie et al., 2011). Literature on each life skill was also reviewed to help create additional items. This decision was taken to ensure that the item pool for each life skill was broad enough to cover the life skill. This fits with Clark and Watson's (1995) suggestion that the content of the initial item pool should be over inclusive. When a saturation point was reached (i.e., no new items were being found or created through examining additional sources), the process was concluded. A total of 38 measures and 34

sources of literature were used when developing the 452 items which represented the eight life skills.

Due to the large number of items developed, the decision was taken to review all items and to eliminate items that were too vague, too lengthy, too complicated for the target population, or possibly indicative of another life skill. Furthermore, double-barreled items (e.g., "to set specific and challenging goals") were split into two items (e.g., "to set specific goals" and "to set challenging goals"). After this process, I was left with 270 items representing teamwork (43 items), goal setting (29 items), time management (26 items), emotional skills (41 items), interpersonal communication (35 items), social skills (36 items), leadership (31 items), and problem solving and decision making (29 items). To ensure content coverage, every component of each life skill was represented by at least three items.

Item Wording

Another consideration during the item selection and development process was the wording of items. Following the advice of scale development experts, I aimed to develop items that were simple, straightforward, and appropriate for the reading level of the target population (Clark & Watson, 1995). Often this meant simplifying the wording of items. I also assessed the items for each life skill for readability using the Flesch-Kincaid readability assessment (Harrison, 1980). Flesch-Kincaid grade levels for each of the life skills were as follows: teamwork (4.0), goal setting (2.8), time management (3.3), emotional skills (5.9), interpersonal communication (5.4), social skills (3.9), leadership (4.9), and problem solving and decision making (6.2). The highest grade level for any of the life skills was 6.2 for problem solving and decision making. Grade six in America

includes 11–12 year olds, which meant that young people of this age should be able to read these items. All other life skills required a reading level of less than 11 years. Given that positive youth development primarily deals with young people in the 11–21 years age range (Holt, 2008), all items were deemed appropriate for the target population.

Content Validity

Content validity is the degree to which elements of a measure are relevant to and representative of the target construct (Haynes et al., 1995). Ensuring content validity is the first step in the validation of a new measure (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). According to Zhu (2012), content-based evidence is the most important validity evidence. It was therefore crucial to carry out a thorough process of gathering content evidence. To obtain content evidence, I asked a panel of experts about the suitability of items assessing each life skill. Due to the large number of items, I choose to contact expert reviewers who had knowledge of a particular life skill, rather than experts in the area of life skill development. In total, 202 experts who had published at least one journal article (most had published far more) on a particular life skill were contacted via email. Of those contacted, 39 reviewers participated in the item review process which was conducted using Bristol Online Surveys (2013). The number of reviewers for each life skill was as follows: teamwork (n = 4), goal setting (n = 7), time management (n = 5), emotional skills (n = 5), interpersonal communication (n = 4), social skills (n = 7), leadership (n = 5), and problem solving and decision making (n = 2). The large number of reviewers increased my confidence in the robustness of the ratings.

The following instructions were given to each reviewer. This particular example refers to interpersonal communication.

> "The purpose of this item review process is to select the best items for assessing the learning of interpersonal communication skills within youth sport (11–21 years). My chosen definition of interpersonal communication is provided below.
>
> There are three steps to reviewing each item: 1. Rate each item from 'poor' (1) to 'excellent' (5) on their ability to measure interpersonal communication skills. 2. Make any comments about the suitability of the item in the box provided (e.g., item wording, suitability for the sporting domain, relates more to another construct, etc.). 3. Indicate what component of interpersonal communication you feel the item relates to".

Each reviewer was then provided with a definition of the life skill and a list of the components comprising the life skill. Again, the example of interpersonal communication is used for illustrative purposes.

> "Interpersonal communication: the process by which people exchange information, feelings, and meaning through verbal and non-verbal messages: it is face-to-face communication. Based on this definition, I view interpersonal communication skills as incorporating the following components: 1) Speaking, 2) Listening, and 3) Non-verbal communication".

Finally, each reviewer was asked the following: "Have you any other comments or suggestions for improving the interpersonal communication skills scale"? Appendix B contains an example of the item review survey that expert reviewers actually completed.

After the item review process, a number of criteria were used to select items for the scale. Firstly, the item must have scored well on its ability to measure the life skill in

question, which generally meant selecting the highest scoring items. This ensured I selected items which reviewers endorsed as accurately measuring the life skill. Secondly, a majority of the reviewers must have agreed that the item referred to one particular component of the life skill. This meant I selected items which accurately covered each component of the life skill. Thirdly, reviewers' comments were taken into consideration when selecting items. For instance, comments such as "does not reflect any component", "multiple possible components", or "will not give you much variance in responses" were considered when choosing items. Lastly, I selected a minimum of three items that represented each component of the life skill. This ensured that every component of the life skill in question was represented.

During the expert review process, the scale was reduced from 270 to 144 items. Table 5 displays the results of the review process for each of the 144 items selected for the first version of the scale. In general, most items were rated quite positively by reviewers. One notable exception were global items which tended to be rated quite poorly. A number of reviewers suggested that global items were "vague", "not specific enough", or "too general". Presumably, reviewers felt that such items lack precision and are very much open to interpretation by respondents. Given that some experts recommend the inclusion of global items (e.g., MacKenzie et al., 2011), I decided to retain some global items that received reasonable ratings and monitor how these items performed during subsequent studies. Poor ratings and comments for the global items representing emotional skills and social skills meant that no global items were retained for these two life skills. Also of note was that 10 items were not assigned to their correct component more than 50% of the time but were retained to ensure adequate content coverage. Specific reviewer feedback also

helped improve the wording of several items. Table 6 contains items whose wording was slightly altered for the first version of the scale.

Directions, Item Stem, and Response Format

After deciding on the items to be included within the scale, three elements of the scale had to be decided upon: (1) the directions given to respondents, (2) the item stem, and (3) the response format. The first two of these issues was settled by having five PhD students and my PhD supervisor review and give feedback on the wording of the directions and item stem. Based on this feedback, the directions I decided upon were as follows:

> "Young people have all kinds of experiences and can learn a lot from playing sport. These questions ask about the skills you may have learned through playing your chosen sport.
>
> Please answer the questions by circling the number to the right of each question. There are no right or wrong answers, so please answer as honestly as possible.
>
> Please rate how much your sport has taught you to perform the skills listed below."

The item stem I decided upon was as follows: "This sport has taught me to…" When choosing an appropriate response format, it was necessary to review a variety of methodological literature before making a final decision. After reviewing this literature, I decided upon the following response format:

Not at all	A little	Some	A lot	Very much
1	2	3	4	5

There were a number of reasons I chose this response format. To begin with, scale development experts (e.g., Hinkin, 1995) suggest that a 5 or 7-point response format is adequate for most measures. I decided on a 5-point scale as I felt it would be easier for

younger respondents (e.g., 11 year olds) to interpret than a 7-point scale. Johns (2010) proposed that five response options have become the norm because they strike a balance between offering enough choice and making things manageable for respondents. Other scales within youth sport have used this 1 (*not at all*) to 5 (*very much*) response format (e.g., Wiersma's Sources of Enjoyment in Youth Sport Questionnaire, 2001). I labelled all five response options as full labelling is said to help respondents to deliver much higher quality data (Johns, 2010).

Other Issues

Before finalising the scale, there were a few issues that had to be dealt with. The first issue was whether to use negatively worded items. The purpose of negatively worded items is to detect or deter agreement tendency, which is the tendency to agree with survey statements regardless of the content of items (Block, 1965). In theory, it is a good idea to use negatively worded items to reduce agreement tendency. However, in practice, negatively worded items perform poorly with athletic samples (Lane et al., 2009). Research in youth sport has shown that positively worded items perform better in terms of internal consistency than a mixture of positively and negatively worded items (Eys, Carron, Bray, & Brawley, 2007). Therefore, I decided to use only positively worded items. Another issue was the ordering of items. I decided to group items for each particular life skill, because as respondents answer questions related to the same construct they come to a better understanding of that construct (Knowles, 1975). Moreover, I felt that scattering items for each life skill throughout the scale would confuse younger respondents.

At the end of the scale development process, I was left with 144 items which measured teamwork (23 items), goal setting (14 items), time management (12 items),

emotional skills (26 items), interpersonal communication (13 items), social skills (18 items), leadership (23 items), and problem solving and decision making (15 items). The use of expert reviewers for each of the life skills provided content validity evidence for these items. When assessed using the Flesch-Kincaid readability assessment (Harrison, 1980), these 144 items required a grade 4.9 reading level. This means that the average 10–11 year old would be able to read these items. The directions to be provided to participants, the item stem, the response format, and the ordering of items were also finalised during the scale development process.

Discussion

The purpose of the scale development process was to create a scale which adequately assessed the development of life skills within youth sport. The steps involved in developing what came to be called the Life Skills Scale for Sport (LSSS) are discussed below. In this discussion, I also detail some of the problems I encountered when developing the scale, along with my observations and views about the process of scale development.

The first step in the scale development process was defining each of the eight life skills. This involved asking two key questions: (1) does this definition make sense for youth sport, and (2) is this definition broad enough to fully cover the life skill? When searching for appropriate definitions, I reviewed literature from a variety of sub-disciplines (e.g., organisational, educational, and military psychology). An array of literature was consulted as some disciplines have long established traditions of researching particular life skills (e.g., time management in organisational psychology) as compared to other disciplines (e.g., time management in sport psychology). Overall, it was quite difficult to

find appropriate definitions for each life skill. This was particularly the case as some researchers fail to define the variables being measured within their publications. What also became apparent was that some researchers defined a particular life skill quite broadly, whereas others defined the life skill quite narrowly. In general, I chose to use broad definitions so that the life skill and all of its components could be adequately represented in my scale.

The second step in the scale development process was choosing the components that comprise each life skill. Again, a variety of literature was consulted as some disciplines had stronger research traditions than others for a particular life skill. What was noticeable during this process was that some researchers selected a whole host of extraneous components as representing a life skill. For instance, some researchers view happiness, optimism, and stress management as components of social skills (e.g., Petrides & Furnham, 2000), whereas I view these components as separate feelings, traits, or skills. This could be a problem with defining a construct and its components too broadly, or simply not clarifying what definition and components one is adopting for a particular construct. Clark and Watson (1995) recommend that a clear conceptualisation of the target construct is necessary during the initial stages of scale development. Heeding the advice of the scale development literature (Clark & Watson, 1995; Hinkin, 1995), I selected components that covered the life skill in its entirety, yet contained no extraneous components. This was challenging as one does not want to either over-represent or under-represent a construct when selecting its components. Another challenging task was ensuring I selected components that made sense for youth sport. This is difficult when one is consulting literature from other disciplines, as the components comprising teamwork

within business may not make sense for youth sport. This being said, the adequacy or inadequacy of components may not become apparent until initial testing of the scale is conducted with the target population. Hence, scale development should be viewed as a multistage process.

The third step in the scale development process was developing items to assess each life skill. Outside of sport psychology, there was a large variety of measures and literature which helped when developing items. A concern with some measures was the lack of information related to their development, validity, and reliability. Despite such concerns, these measures did provide items that could be used when developing my scale. Selecting and revising items from existing measures and literature is an approach I would recommend as it is less time-consuming than creating original items and ensures that a greater quantity and quality of items are developed. It is likely that better items will be developed using this approach as items would have been vetted by two separate sets of scale developers. That is, the developer/s of the original scale and the developer/s of the new scale would have assessed each item. Adopting or revising scales or items from other settings is a common approach when developing measures for sport psychology. For example, when developing the Sport Friendship Quality Scale, Weiss and Smith (1999) adopted and modified the Friendship Quality Questionnaire (Parker & Asher, 1993) and tested its validity within youth sport. Regarding the number of items to develop, I would suggest developing 2–5 times the amount of items that will be needed for the final scale. This should ensure that a construct is covered in its entirety, there is scope to delete items that perform badly during the content validity stage, and there is room to delete items that

perform poorly during later factor analysis. This approach of developing a large item pool has been used by other sport psychology researchers (e.g., Eys et al., 2009).

The fourth step in the scale development process was assessing the content validity evidence for items representing each life skill. This was a time consuming task as only 19% of the experts (39 out of 202) I contacted took part in the item review process. Nevertheless, the thoroughness of this process meant that the views of independent reviewers (i.e., reviewers unconnected to the scale developer) were obtained. This was seen as an advantage because an independent reviewer may be more likely to be critical when giving feedback as compared to a reviewer who knows the survey developer/s. This approach has been used by others when developing measures for sport psychology (e.g., Ng, Lonsdale, & Hodge, 2011; Thomas et al., 1999). After obtaining feedback from reviewers, the next task was to sift through this feedback and select items that best represented each life skill. The main difficulty during this process was choosing between items that were rated similarly. It was therefore useful to obtain a variety of feedback from reviewers (i.e., item rating, assignment to a component, and other comments) as it allowed for a multitude of information to be considered when selecting items. As a final point, I would recommend using an online survey to assess content validity evidence as it is easy to create, distribute to experts worldwide, and score.

In summary, the processes involved in developing the LSSS were both arduous and time-consuming. However, I would maintain that such efforts are necessary in order to develop a scale of adequate quality. Other researchers have also proposed that these front-end processes are of primary importance when developing a scale (MacKenzie et al., 2011). Although carrying out these processes can be a difficult task, it is the best method

of developing a good quality scale. Given the fundamental importance of measurement within psychology, this seems a task worth undertaking.

Refinement and Validation of the LSSS

Refining and validating the LSSS involved a series of studies. Study 3 examined the factor structure of each subscale of the LSSS and assessed the performance of individual items using both EFA and descriptive statistics. The aim of this study was to reduce the 144-item LSSS to a more manageable 47 items. Study 4 used CFA to assess the factor structure of the refined 47-item LSSS with an independent sample. This study provided for an assessment of the factorial, convergent, and discriminant validity evidence for the LSSS. Study 5 assessed the test-retest reliability of the LSSS over a two-week period with another independent sample.

Study 3 – Purpose and Overview

This study used EFA and descriptive statistics to reduce the number of items in the LSSS from 144 to 47 items. I decided on 47 items because it meant that each component of each life skill would be represented in the scale. Specifically, each life skill would have 4–8 items in the scale depending on how many components made up the particular life skill. For example, interpersonal communication would have four items representing four components: speaking, listening, non-verbal communication, and a global item. Four items was the minimum allowed for any subscale as several researchers have recommended that at least four items are needed to describe a construct and ensure adequate internal consistency (Jackson & Marsh, 1996; Watson & Clark, 1997). EFA rather than CFA was chosen at this stage as I wanted to obtain evidence for the factor structure of the subscales and reduce the number of items in the scale prior to conducting CFA. Several

methodologists and researchers agree that EFA is preferred to CFA in the early stages of survey development (e.g., Brown, 2006; Kelloway, 1995). EFA is also considered a useful method of data reduction when developing or refining a new scale (Anderson & Gerbing, 1988; Conway & Huffcut, 2003; Floyd & Widaman, 1995).

Method

Participants

The sample comprised of 338 Scottish youth sports participants (M_{age} = 14.71, *SD* = 2.42, age range = 11–21) who participated in a range of sports. The main sports represented were football (*n* = 87), swimming (*n* = 40), dance (*n* = 34), field hockey (*n* = 27), basketball (*n* = 21), athletics (*n* = 18), golf (*n* = 15), and rugby (*n* = 12). The sample also included 84 respondents who participated in 30 other sports (e.g., tennis, netball, badminton, horse riding, boxing, etc.). The sample had slightly more male (*n* = 189) than female participants (*n* = 149). Participants played their primary sport for an average of 5.34 hours per week (*SD* = 4.79) and had an average of 6.24 years (*SD* = 3.93) playing experience. This sample adequately represented youth sport as it included a wide variety of sports and incorporated those between the ages of 11–21 years, which is considered youth (Papalia et al., 2006). Ensuring a representative sample was important as the sample used to refine or validate a scale should represent the population the scale will be used with (Gorsuch, 1997; Hinkin, 1995).

Procedures

Following approval from the University of Stirling's ethics committee, participants were recruited by contacting physical education teachers from local schools. Initial contact was made via email, telephone, or face-to-face meetings and permission to survey the

school was granted. Prior to completing the scale, informed consent was obtained from either the youth sport participant (if 16 years or older) or the participant's parent or guardian (if less than 16 years). Participants completed the scale after the researcher gave a standardised introductory statement. This explained the purpose of the study, that there were no right or wrong answers, and that all information provided would be confidential. Throughout the process participants were encouraged to ask questions if they did not understand anything and were kept on task by the researcher. The scale took approximately 20–25 minutes to complete.

Measures

Life skills development. The 144-item LSSS (see Appendix C) was used to measure the extent to which youth sport participants were developing certain life skills through playing their chosen sport. The scale asks participants to "rate how much your sport has taught you to perform the skills listed below". Participants responded on a five-point scale ranging from 1 (*not at all*) to 5 (*very much*). Example items include: *teamwork* (23 items; "work well within a team/ group"), *goal setting* (14 items; "set challenging goals"), *time management* (12 items; "manage my time well"), *emotional skills* (26 items; "notice how I feel"), *interpersonal communication* (13 items; "speak clearly to others"), *social skills* (18 items; "start a conversation"), *leadership* (23 items; "know how to positively influence a group of individuals"), and lastly, *problem solving and decision making* (15 items; "think carefully about a problem").

Data Analyses

Before performing EFA, I assessed the suitability of the data for factor analysis using Bartlett's (1937) test statistic, the Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy, and the anti-image covariance matrix. A significant Bartlett's (1937) test statistic indicates that the data is suitable for EFA (Pallant, 2005). KMO values above .90 indicate superb sampling adequacy (Hutcheson & Sofroniou, 1999). Having the majority of off-diagonal elements on the anti-image covariance matrix less than .1 means the data is appropriate for EFA (Dziuban & Shirkey, 1974). Previous research by Payne, Hudson, Skehurst, and Ntoumanis (2013) has used these three tests to assess whether a dataset is suitable for EFA.

The main purpose of the data analyses in this study was to reduce the LSSS from 144 to 47 items. Reducing the number of items involved two steps: (1) conducting an EFA on each subscale, and (2) examining the descriptive statistics for individual items. Both the EFA results and descriptive statistics were used to select items for the next version of the scale.

EFA was conducted on each subscale using SPSS version 19.0 (IBM Corp., 2010). Principal component analysis was used as I wanted an empirical summary of the dataset (Tabachnick & Fidell, 2007). An unrotated factor solution was specified as at this early stage I wanted to explore each subscale and decide how many factors were evident. Three methods were used to determine the number of factors. Firstly, I examined the eigenvalues for each possible factor. According to Kaiser's (1960) criterion, only eigenvalues greater than 1.0 should be retained for further investigation. However, this approach has been criticised as it often results in the retention of too many factors (Pallant, 2005). Further criticism of this approach comes from Brown (2006), who pointed out that 1.0 is simply an arbitrary number which could result in the rejection of factors with a .99 eigenvalue and inclusion of factors with a 1.01 eigenvalue. Secondly, I used Cattell's (1966) scree test,

which uses a graph to plot eigenvalues on the vertical axis and factors on the horizontal axis. This graph is inspected to determine the point where the plotted line changes direction and becomes horizontal (Pallant, 2005). This point indicates how many factors should be retained. A limitation of the scree test is that results may be ambiguous and open to interpretation (Brown, 2006). For instance, it can be difficult to decide the exact point at which the plotted line goes from vertical to horizontal as this may be a gradual process. Thus, one person may select one point as the point of change, whereas another person may decide on a different point. Thirdly, I used parallel analysis (Horn, 1965) to help decide on how many factors to retain. As SPSS does not include parallel analysis, I used O'Connor's (2000) SPSS syntax to conduct parallel analysis. Parallel analysis compares the eigenvalues obtained from the real dataset with eigenvalues generated from random datasets. The number of factors retained is guided by the number of eigenvalues greater than the eigenvalues generated from the random data. That is, if the factor obtained using the real dataset explains less variance than the corresponding factor obtained from random data, it should not be retained. Both the average eigenvalue and the 95th percentile eigenvalue obtained through parallel analysis should be used when deciding whether to retain a factor, as parallel analysis has a slight tendency to retain too many factors (Hayton, Allen, & Scarpello, 2004). Generally, parallel analysis is considered the best method for deciding on the number of factors within the data (Henson & Roberts, 2006; Velicer, Eaton, & Fava, 2000). Nonetheless, based on the recommendations of several experts (e.g., Fabrigar, Wegener, MacCallum, & Strahan, 1999; Thompson & Daniel, 1996) I chose to use all three methods (i.e., the Kaiser's criterion, the scree test, and parallel analysis) when deciding on the appropriate number of factors.

It is important to acknowledge that deciding on the number of factors to retain is not a completely objective process and some judgement is required from the scale developer who understands the content of the scale. Several researchers suggest that the validity of a factor should be evaluated in part by its interpretability, scientific utility, and replicability (Brown, 2006; Tabachnick & Fidell, 2007). That is, retained factors should be interpretable based on the definition and components the researcher has adopted. According to Tabachnick and Fidell (2007), a factor is easily interpreted when items correlate highly with one factor and do not correlate with other potential factors. These researchers also advise that factors which account for little variance and include only a few items are unreliable and unlikely to be replicated in future research. In sum, along with Kaiser's criterion, the scree test, and parallel analysis, I took the variance explained, interpretability, scientific utility, and replicability of a potential factor into consideration when deciding on the number of factors to retain.

The next step after deciding the number of factors in each subscale was to select the best items for the next version of the scale. The following information was collated so that I could compare the performance of individual items based on the following criteria:

1. Factor loading – the highest factor loadings during EFA.
2. Cross-loading – no cross loadings with other possible factors.
3. Mean score – as close to the midpoint of the response scale as possible.
4. Standard deviation – a high standard deviation to ensure variability.
5. Skewness – as close to zero as possible.
6. Kurtosis – as close to zero as possible.

First, I aimed to select items with the highest factor loadings during EFA. Comrey and Lee (1992) suggest that loadings greater than .71 are considered excellent, .63 very good, .55 good, .45 fair, and .32 poor. This criteria was used to help decide on items to retain. However, simply retaining the highest loading items may not yield the scale that best represents the target construct (Clark & Watson, 1995). In order to maintain content coverage for each life skill, it was necessary to select items representing each component of the life skill. Second, I wanted to choose items which did not cross-load substantially on other potential factors. Where possible, this meant selecting 'pure' items, which are correlated highly with only one factor, as opposed to 'complex' items which are correlated with several factors (Tabachnick & Fidell, 2007). Several experts recommend selecting 'pure' items when developing or refining a scale (e.g., Floyd & Widaman, 1995; Reise, Waller, & Comrey, 2000). Third, I looked to select items which had a mean score that was closer to the mid-point (3) on the 1–5 response scale. This decision was taken as items convey little information when all respondents simply agree or disagree with the item by circling the endpoints of the response scale (Clark & Watson, 1995). Fourth, I aimed to choose items with a higher standard deviation, which shows that the item obtains a greater variability in responses. Ensuring variability in responses is important as items with poor variability are likely to correlate weakly with other items and perform poorly during subsequent structural analyses (Clark & Watson, 1995). It was also important to retain items that ensured variability and discriminated at different points along the 1–5 response scale. This would ensure that each subscale would have the ability to detect high responders (i.e., those who feel they learn a lot about the life skill) and low responders (i.e., those who feel they learn a little about the life skill). Fifth, I looked for items that scored

closer to zero for both skewness and kurtosis. This would ensure that items display a normal distribution, which is a fundamental assumption of most statistical tests (Tabachnick & Fidell, 2007). Finally, if items displayed similar scores across the six criteria, I used the content validity information from expert reviewers to select the most appropriate item. This approach is in accordance with the advice of methodologists (e.g., Fabriger et al., 1999) who propose that validity information be considered when selecting items for a scale.

Results

Preliminary Analysis

Prior to conducting the main analyses, the data were screened for normality using skewness and kurtosis values. In accordance with Curran and colleagues' (1996) interpretation, skewness values of less than 2.0 and kurtosis values of less than 7.0 were considered reasonably normal. In this study, skewness values ranged from -1.30 to -.02 and kurtosis values ranged from -1.32 to 1.47, indicating reasonable normality. Of the 144 items in the LSSS, participants failed to respond to an average of 3.76 items (*SD* = 2.32; range = 0–11). Missing data analysis revealed no pattern to these missing values, rather the data was missing at random. As the percentage of missing data was low (2.6%) and I wanted to minimise lost data, a mean substitution was performed. Mean substitution is both a popular and valid approach for dealing with missing data when a small percentage of data is missing from a moderately sized dataset (Tabachnick & Fidell, 2007).

Preliminary tests were carried out to assess the suitability of the data for EFA. Bartlett's (1937) test statistic was significant for each of the eight life skills: teamwork, $\chi^2(253) = 3{,}524.38$, $p < .001$; goal setting, $\chi^2(91) = 2{,}811.75$, $p < .001$; time management,

$\chi^2(66) = 2{,}614.58$, $p < .001$; emotional skills, $\chi^2(325) = 5{,}248.57$, $p < .001$; interpersonal communication, $\chi^2(78) = 2{,}729.17$, $p < .001$; social skills, $\chi^2(153) = 3{,}396.88$, $p < .001$; leadership, $\chi^2(253) = 5{,}294.46$, $p < .001$; and problem solving and decision making, $\chi^2(105) = 3{,}744.78$, $p < .001$. These significant test statistics indicated that the data was suitable for EFA (Pallant, 2005). The KMO measure of sampling adequacy for each of the subscales ranged from .92 to .97, indicating superb sampling adequacy (Hutcheson & Sofroniou, 1999). The majority of off-diagonal elements on the anti-image covariance matrix were < .1, which means the data was appropriate for EFA. Based on the above tests, the correlation matrix was deemed suitable for EFA (Dziuban & Shirkey, 1974).

Main Analyses

Teamwork. Table 7 contains the component matrix for teamwork. The teamwork subscale had four factors with eigenvalues above 1.0. Each factor displayed the following eigenvalues and percentage of variance they explained: factor 1 (eigenvalue = 8.87; variance = 38.55%), factor 2 (eigenvalue = 2.01; variance = 8.74%), factor 3 (eigenvalue = 1.39; variance = 6.06%), and factor 4 (eigenvalue = 1.32; variance = 5.74%). In contrast to Kaiser's (1960) criterion, both the scree plot (see Figure 2) and parallel analysis (see Table 8) suggested retaining two factors. To aid in the interpretation of these two factors, a further oblique (direct oblimin; $\delta = 0$) rotation was performed as the factors were thought to be correlated rather than orthogonal (Conway & Huffcut, 2003). The pattern matrix for the rotated solution contained eight items that loaded onto factor 2 (see Table 9). Three of these items represented the 'accepting suggestions or criticism' component of teamwork, three represented 'cooperation', one represented 'team spirit', and one represented 'providing suggestions or criticism'. However, only three of these items had factor

loadings above .71 which can be described as ‘excellent’, with the other five items displaying loadings marginally above .45 (‘fair’) and .32 (‘poor’) (Comrey & Lee, 1992). The three items with excellent factor loadings on the second factor were “accept criticism from others”, “accept differences of opinion with others”, and “ask others how I can improve”. Looking at these items, I found it difficult to interpret them as a separate

Table 7

Component Matrix for the Teamwork Subscale

Item #	Factor 1	Factor 2	Factor 3	Factor 4
1	**.68**	-.48		
2	**.44**		**.50**	
3	**.68**		.33	
4	**.72**			
5	**.73**	-.31		
6	**.68**			
7	**.75**	-.33		
8	**.69**			-.39
9	.35	**.56**	.39	
10	**.52**	**.50**		
11	**.70**			
12	**.66**			
13	**.73**			
14	**.54**	.31		**-.56**
15	**.68**			-.39
16	**.40**	**.59**		
17	**.54**		**-.42**	**.41**
18	**.74**			
19	**.45**			
20	**.69**			
21	**.67**			
22	**.58**		**-.46**	.34
23	.35	.35		**.55**

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

teamwork factor that would have scientific utility. Therefore, I interpreted teamwork as involving one factor and excluded these items from the first version of the scale.

Goal setting. Table 10 contains the component matrix for goal setting. This subscale contained two factors which had eigenvalues above 1.0. The eigenvalues and percentage of variance they explained were as follows: factor 1 (eigenvalue = 7.60; variance = 54.27%) and factor 2 (eigenvalue = 1.13; variance = 8.11%). Both the scree

Table 10

Component Matrix for the Goal Setting Subscale

Item #	Factor 1	Factor 2
1	**.68**	
2	**.69**	
3	**.63**	**.56**
4	**.77**	
5	**.63**	**.55**
6	**.75**	.30
7	**.77**	
8	**.81**	
9	**.82**	
10	**.81**	-.32
11	**.76**	-.33
12	**.73**	
13	**.68**	
14	**.76**	

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

plot (see Figure 3) and parallel analysis (see Table 11) suggested retaining one factor. Furthermore, items which loaded onto factor 2 displayed higher factor loadings on factor 1. Based on these results, I interpreted goal setting as having one factor.

Time management. Table 12 contains the component matrix for time management. The time management subscale only had one factor with an eigenvalue above 1.0 (eigenvalue = 7.05; variance = 58.78%). The scree plot (see Figure 4) and parallel analysis (see Table 13) also suggested retaining one factor. Thus, it was clear that time management involved one factor.

Table 12
Component Matrix for the Time Management Subscale

Item #	Factor 1
1	**.73**
2	**.71**
3	**.81**
4	**.84**
5	**.82**
6	**.77**
7	**.85**
8	**.78**
9	**.76**
10	**.82**
11	**.64**
12	**.62**

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

Emotional skills. Table 14 contains the component matrix for emotional skills. This subscale contained three factors which had eigenvalues above 1.0. Each factor displayed the following eigenvalues and percentage of variance they explained: factor 1 (eigenvalue = 12.47; variance = 47.97%), factor 2 (eigenvalue = 1.50; variance = 5.78%), and factor 3 (eigenvalue = 1.07; variance = 4.13%). Both the scree plot (see Figure 5) and

parallel analysis (see Table 15) suggested retaining one factor. Additionally, items which loaded onto factors 2 and 3 displayed higher factor loadings on factor 1. Based on these results, I interpreted emotional skills as having one factor.

Table 14

Component Matrix for the Emotional Skills Subscale

Item #	Factor 1	Factor 2	Factor 3
1	**.68**		.35
2	**.70**	-.33	
3	**.66**		
4	**.71**		
5	**.57**	**-.43**	
6	**.67**		
7	**.72**	-.31	
8	**.66**	.32	
9	**.74**		
10	**.71**		
11	**.73**		
12	**.67**		
13	**.66**		
14	**.74**		
15	**.73**	-.30	
16	**.75**		
17	**.58**	**.40**	
18	**.77**		
19	**.61**		**.53**
20	**.81**		
21	**.76**		
22	**.64**		
23	**.64**		**.45**
24	**.71**		
25	**.53**	**.53**	
26	**.80**		

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

Interpersonal Communication. Table 16 contains the component matrix for interpersonal communication. The interpersonal communication subscale had two factors with eigenvalues above 1.0. The eigenvalues and percentage variance they explained were as follows: factor 1 (eigenvalue = 7.44; variance = 57.20%) and factor 2 (eigenvalue = 1.01; variance = 7.74%). Both the scree plot (see Figure 6) and parallel analysis

Table 16
Component Matrix for the Interpersonal Communication Subscale

Item #	Factor 1	Factor 2
1	**.78**	-.33
2	**.80**	-.33
3	**.75**	
4	**.80**	-.37
5	**.80**	
6	**.77**	
7	**.78**	
8	**.71**	.39
9	**.77**	.38
10	**.68**	.31
11	**.77**	
12	**.68**	

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

(see Table 17) suggested retaining one factor. Furthermore, items which loaded onto factor 2 displayed higher factor loadings on factor 1. Thus, I interpreted interpersonal communication as involving one factor.

Social skills. Table 18 contains the component matrix for social skills. This subscale contained two factors which had eigenvalues above 1.0. Each factor displayed the following eigenvalues and percentage of variance they explained: factor 1 (eigenvalue =

8.95; variance = 49.73%) and factor 2 (eigenvalue = 1.33; variance = 7.41%). Both the scree plot (see Figure 7) and parallel analysis (see Table 19) suggested retaining one factor. In addition, items which loaded onto factor 2 displayed higher loadings on factor 1. Based on these results, I interpreted social skills as involving one factor.

Table 18

Component Matrix for the Social Skills Subscale

Item #	Factor 1	Factor 2
1	**.73**	-.34
2	**.64**	-.38
3	**.77**	
4	**.68**	**-.41**
5	**.68**	-.35
6	**.77**	
7	**.71**	
8	**.69**	
9	**.77**	
10	**.72**	
11	**.66**	
12	**.77**	
13	**.67**	
14	**.78**	
15	**.61**	**.44**
16	**.67**	
17	**.59**	
18	**.76**	

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

Leadership. Table 20 contains the component matrix for leadership. The leadership subscale had two factors with eigenvalues above 1.0. Each factor displayed the following eigenvalues and percentage of variance they explained: factor 1 (eigenvalue = 12.75; variance = 55.43%) and factor 2 (eigenvalue = 1.02; variance = 4.44%). Both the scree plot (see Figure 8) and parallel analysis (see Table 21) suggested retaining one factor.

Also, items which loaded onto factor 2 displayed higher loadings on factor 1. Therefore, I interpreted leadership skills as having one factor.

Table 20

Component Matrix for the Leadership Subscale

Item #	Factor 1	Factor 2
1	**.72**	
2	**.76**	
3	**.76**	
4	**.71**	.30
5	**.73**	
6	**.78**	
7	**.70**	**.43**
8	**.76**	
9	**.69**	
10	**.77**	
11	**.77**	
12	**.76**	
13	**.77**	
14	**.78**	
15	**.73**	
16	**.81**	
17	**.76**	
18	**.74**	-.31
19	**.73**	**-.40**
20	**.74**	
21	**.72**	
22	**.75**	
23	**.67**	

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

Problem solving and decision making. Table 22 contains the component matrix for problem solving and decision making. This subscale contained two factors which had eigenvalues above 1.0. Each factor displayed the following eigenvalues and percentage of

variance they explained: factor 1 (eigenvalue = 8.99; variance = 60.00%) and factor 2 (eigenvalue = 1.03; variance = 6.83%). Both the scree plot (see Figure 9) and parallel

Table 22
Component Matrix for the Problem Solving and Decision Making Subscale

Item #	Factor 1	Factor 2
1	**.77**	
2	**.82**	-.35
3	**.82**	-.33
4	**.75**	-.38
5	**.75**	
6	**.82**	
7	**.75**	
8	**.71**	
9	**.79**	
10	**.77**	
11	**.78**	.35
12	**.74**	.37
13	**.79**	
14	**.78**	
15	**.79**	

Note. Exploratory factor analysis was conducted with an unrotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

analysis (see Table 23) suggested retaining one factor. Additionally, items which loaded onto factor 2 displayed higher loadings on factor 1. Based on these results, I interpreted problem solving and decision making as involving one factor.

Item Selection

After deciding that each life skill was best represented by one factor, I selected the best items for the next version of the scale. As discussed earlier, this involved selecting items based on the following statistical criteria: (1) factor loading during EFA, (2) cross-

loadings during EFA, (3) mean score, (4) standard deviation, (5) skewness values, and (6) kurtosis values. It was also important to ensure that the components of each life skill were adequately represented. To aid in the selection of items, I created tables for each life skill (see Tables 24–31). These tables allowed me to compare items for each life skill and decide which items to include in the next version of the scale.

In total, I retained 47 items for the next version of the scale which ensured that every component of each life skill was represented. By selecting items that would represent every component of each life skill, I ensured adequate content coverage in the next version of the scale. Regarding global items, one item from the problem solving and decision making subscale ("know how to solve problems in my life") was dropped as numerous participants had difficulty with and asked questions about this item when completing the survey. Within each of their subscales, the factor loadings for retained items ranged from .44 to .83. The majority of items had factor loadings above .71 (n = 41) with a small number of items displaying factor loadings above .63 (n = 5). Loadings in excess of .71 are considered excellent and above .63 are seen as very good (Comrey & Lee, 1992). Only one item displayed a factor loading of less than .63. This item was from the teamwork subscale ("accept suggestions for improvement from others") and displayed a factor loading of .44. As none of the other items representing the 'accepting suggestions and criticism' component of teamwork had higher factor loadings, I retained this item to ensure content coverage. Within their subscales, only 11 of the 47 items selected displayed any tendency to cross-load with other possible factors. Ten of these items had cross loadings of between .30 and .39 on a possible second factor. These values were considerably lower than the first factor loading and as such were not problematic. Only

item 2 from the teamwork subscale ("accepting suggestions for improvement from others") had a cross-loading which was higher than its first factor loading. Mean scores of the 47 selected items ranged from 3.33 to 4.13. Although the mean scores for all items were above the mid-point (3) on the 1–5 response scale, they were definitely not items which everyone would simply agree or disagree with. The standard deviation of the retained items ranged from .86 to 1.24. This indicated that the items would ensure a certain level of variability amongst responses, which would allow the survey to discriminate between high and low responders. Lastly, skewness values ranged from -1.18 to -.25 and kurtosis values ranged from -.86 to 1.55, indicating reasonable normality (Curran et al., 1996).

With the 47 retained items, I calculated Cronbach's alpha coefficients for each of the eight subscales: teamwork (.90), goal setting (.90), time management (.89), emotional skills (.89), interpersonal communication (.88), social skills (.85), leadership (.92), and problem solving and decision making (.88). Cronbach's (1951) alpha coefficient measures internal consistency reliability, which concerns the homogeneity of items within a scale (i.e., are all items in a scale measuring the same underlying construct). Alpha coefficients above .70, as was the case here, indicate adequate internal consistency reliability (Nunnally & Bernstein, 1994).

Discussion

The purpose of Study 3 was to reduce the LSSS to 47 items that had both statistical and conceptual integrity. Using both EFA and descriptive statistics, I selected 47 items to include in the next version of the scale. These 47 items measured teamwork (7 items), goal setting (7 items), time management (4 items), emotional skills (8 items), interpersonal communication (4 items), social skills (5 items), leadership (8 items), and problem solving

and decision making (4 items). All of these items went through a rigorous process of selection during this study.

During this study, EFA was used to assess the factor structure of each subscale. Using multiple methods (i.e., Kaiser's criterion, scree plots, and parallel analysis), I determined that each subscale was best represented by one factor. In all cases, both the scree plot and parallel analysis agreed on the number of factors to retain. Kaiser's criterion nearly always suggested (one exception) retaining too many factors – a common criticism of this approach (Pallant, 2005). Based on these results, I would recommend that multiple methods be used when determining the number of factors present in a dataset. Given that some level of interpretation is required when deciding on the number of factors (Brown, 2006; Tabachnick & Fidell, 2007), using multiple methods seems a useful approach.

EFA was also used to select items for the next version of the scale. As suggested by several researchers (Anderson & Gerbing, 1988; Conway & Huffcut, 2003; Floyd & Widaman, 1995), EFA is a viable method for reducing the number of items in a scale. Specifically, EFA helped identify ideal items which displayed high factor loadings on the primary factor and did not cross-load with other potential factors. Alongside the factor loadings and cross-loadings from EFA, a variety of descriptive statistics (mean scores, standard deviations, skewness and kurtosis values) were used when selecting items. Paying attention to the descriptive statistics ensured that I selected items which not everyone agreed or disagreed with, ensured a high level of variability, and would produce a normal distribution in future studies. All of these are important factors to consider when developing a scale (Clark & Watson, 1995; Tabachnick & Fidell, 2007). Combined, the use of EFA and descriptive statistics ensured that the best items were selected for the next

version of the scale. The rigorous approach taken during this study was aligned with the proposition that researchers should pay more attention to the front-end processes when developing a new scale (MacKenzie et al., 2011).

In summary, Study 3 provides preliminary support for the unidimensional structure of each of the eight subscales of the LSSS. However, as validity is an ongoing endeavour (DeVellis, 2011), it is important to confirm the factor structure of each subscale and the whole scale with an independent sample. Given that factorial validity evidence is only one aspect of validity (*The Standard*, 1999), evidence for both convergent and discriminant validity would need to be assessed during future studies. The present study also provided preliminary evidence for the internal consistency reliability of the LSSS subscales. Future studies should look to re-assess the internal consistency reliability of the scale and examine its test-retest reliability.

Study 4 – Purpose and Overview

The aim of this study was to assess the eight-factor structure of the 47-item LSSS. Building on the previous study, I wanted to test the factor structure of each subscale and the whole-model using CFA. For this task, another independent sample of youth sport participants would need to complete the scale. This would allow for the assessment of factorial, convergent, and discriminant validity evidence for the LSSS. To replicate the findings of the previous study, the internal consistency reliability of each subscale would be tested. Lastly, descriptive statistics were calculated for each of the eight subscales of the LSSS.

Method

Participants

To examine validity and reliability evidence for the scale, 223 Scottish youth sports participants (M_{age} = 15.01, *SD* = 2.81, age range = 10–21 years) completed the 47-item LSSS. The main sports represented were football (*n* = 82), dance (*n* = 25), swimming (*n* = 22), field hockey (*n* = 16), rugby (*n* = 15), and basketball (*n* = 10). In total, 63 respondents participated in 23 other sports (e.g., track and field, golf, horse riding, etc.). The sample comprised more male (*n* = 131) than females (*n* = 92), with an average of 6.87 years (*SD* = 4.08) playing experience. Participants played their sport for an average of 5.35 hours per week (*SD* = 4.08). This sample adequately represented youth sport, as it included those between the ages of 11–21 years and included a wide variety of youth sports.

Procedures

Following approval from the University of Stirling's ethics committee, participants were recruited by contacting physical education teachers from local schools. Prior to completing the scale, informed consent was obtained from all participants or their parent/guardian if under 16 years. Participants completed the scale after the researcher gave the same introductory statement which was described in Study 3. Throughout the process participants were encouraged to ask questions if they did not understand anything and were kept on task by the researcher. The scale took approximately 5–10 minutes to complete.

Measures

Life skills development. The 47-item LSSS (see Appendix D) was used to measure the extent to which youth sport participants were developing life skills through

playing their sport. Participants were asked to "rate how much your sport has taught you to perform the skills listed below". Participants responded on a five-point scale ranging from 1 (*not at all*) to 5 (*very much*). Example items included: *teamwork* (7 items; "help another team/group member perform a task"), *goal setting* (7 items; "set specific goals"), *time management* (4 items; "control how I use my time"), *emotional skills* (8 items; "know how to deal with my emotions"), *interpersonal communication* (4 items; "communicate well with others"), *social skills* (5 items; "interact in various social settings"), *leadership* (8 items; "be a good role model for others"), and *problem solving and decision making* (4 items; "evaluate a solution to a problem").

Data Analyses

CFA employing maximum likelihood estimation was conducted using AMOS 19.0 (Arbuckle, 2010). When conducting CFA, the first step was to examine each subscale for fit. After ensuring that each subscale displayed an adequate fit, the full model was tested. The following fit indices were used to assess model fit: chi-square (χ^2), chi-square statistic divided by degrees of freedom (*df*), RMSEA (Stieger & Lind, 1980), CFI (Bentler, 1990), and NNFI (Tucker & Lewis, 1973). Biddle et al. (2001) suggest that the principal means of assessing a good fit is a non-significant chi-square ($p > .05$). However, with a large sample size ($N > 200$), models rarely fit via the chi-square test statistic (Barrett, 2007). Consequently, Jöreskog & Sörbom, (2003) have recommended that large chi-square values relative to *df* indicate a poor fit, and small values indicate a good fit. Researchers suggest that the chi-square value relative to *df* ratio should be 3:1 or lower (Kline, 2000; Tabachnick & Fidell, 2007). Hu and Bentler's (1999) criteria was used for assessing the RMSEA, CFI and NNFI values. An RMSEA of equal or less than .06 indicates a close fit,

less than .08 a reasonable fit, and greater than .10 a poor fit. For the CFIs and NNFIs, >.90 indicates adequate fit and >.95 indicates excellent fit. In summary, a combination of the chi-square test statistic, chi-square statistic divided by *df* ratio, and Hu and Bentler's (1999) criteria were used to assess model fit. This approach of examining and reporting a range of fit indices to evaluate model fit has been recommended by several authors (Hu & Bentler, 1999; Jöreskog, 1993).

To assess convergent validity evidence, I checked to see whether items loaded significantly onto their hypothesized factor by displaying a *p*-value less than .01 (Anderson & Gerbing, 1988). To evaluate discriminant validity evidence for the eight subscales, competing models where the unconstrained model was compared to a series of models where the correlation between pairs of factors was constrained to 1.00 were performed. For discriminant validity to be evident, the unconstrained models chi-square value has to be significantly less than the constrained model (cf. Anderson & Gerbing, 1988). Competing models were compared using the χ^2 difference test. This involved subtracting the χ^2 value of the constrained model from the χ^2 value of the unconstrained model, and subtracting the *df* of the constrained model from the *df* of the unconstrained model. The resulting χ^2 difference value and its associated *df* are then compared against the *Critical Values of Chi-Square* table (see Tabachnick & Fidell, 2007, p. 949). If the χ^2 difference value and its associated *df* are significant, the unconstrained model would fit the data best. It must be noted that some researchers disagree with Anderson and Gerbing's (1988) method of assessing convergent and discriminant validity evidence (e.g., Gunnell et al., 2014a). However, given the breadth and size of the scale (eight life skills and 47 items), I felt it was necessary to assess convergent and discriminant validity evidence within the scale. A

similar approach has been taken by others during the scale development process (e.g., Boardley & Kavussanu, 2007; Lonsdale et al., 2008).

When developing a scale, it is also important to test other plausible models (Jackson et al., 2009). Therefore, during CFA, I compared a first-order model and a second-order model to the original eight-factor model. The first-order model contained one factor representing all 47 life skills items. If the first-order model exhibited a better fit than the eight-factor model, it would indicate that one factor representing all life skills items would best represent life skills development through sport. The second-order model contained eight factors composing a higher-order factor. If the second-order model fit the data as well as the original eight-factor model, this would indicate that the eight factors are also representative of a global life skills construct. After conducting CFA, I also tested each of the eight life skills subscales for internal consistency reliability by calculating Cronbach's alpha coefficients. Finally, descriptive statistics were calculated for each life skill.

Results

Preliminary Analysis

Prior to conducting the main analyses, the data were screened for normality. Skewness values ranged from -1.35 to -.30 and kurtosis values ranged from -.82 to 1.87, indicating reasonable normality (Curran et al., 1996). Of the 47 items, participants failed to respond to an average of 2.65 items (*SD* = 2.16; range = 0–10). Missing data analysis revealed no pattern to these missing values, rather the data was missing at random. Therefore, both means and intercepts were estimated during CFA to replace missing data. Tabachnick and Fidell (2007) suggest that mean substitution is a valid approach when a small amount of data is missing from a moderately sized dataset.

Main Analyses

CFA results for each of the eight subscales are contained in Table 32. Six of the eight subscales demonstrated an excellent fit. Only the problem solving and decision making subscale, and emotional skills subscale displayed a less than adequate fit.

Table 32
CFA Fit Indices for the Life Skills Scale for Sport

Model	χ^2	*df*	χ^2 / *df*	RMSEA	CFI	TLI	FL Range
Teamwork	19.51	14	1.39	.04	.99	.97	.22–.77
Goal setting	24.47*	14	1.75	.06	.99	.98	.73–.83
Time management	3.25	2	1.63	.05	1.00	.99	.73–.86
Emotional skills	111.27**	20	5.56	.14	.90	.81	.65–.77
Communication	.24	2	.12	.00	1.00	1.02	.66–.84
Social skills	3.91	5	.78	.00	1.00	1.01	.71–.85
Leadership	43.57**	20	2.18	.07	.97	.95	.59–.79
Problem solving	19.70**	2	9.85	.20	.96	.82	.64–.87

Note. $N = 223$. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; FL = factor loading.
*$p < .05$; **$p < .01$.

However, the factor loadings for these subscales did not reveal any items that were affecting model fit (see Table 33). Only the teamwork subscale had an item with a factor loading less than .40. This was the "accepting suggestions for improvement from others" item that proved problematic during the previous study. As the teamwork scale displayed an excellent fit and this item was crucial to ensuring content coverage, this item was retained. With the problem solving and decision making subscale, there was little that could be done to improve its fit as the subscale only contained four items which assessed the four components of problem solving and decision making. Deleting any of these items would have compromised the content coverage of this subscale. This meant that I was faced with conflicting evidence regarding the problem solving and decision making subscale; an EFA which supported its factorial validity and a CFA which did not support

its factorial validity. Given that validity is an ongoing process (DeVellis, 2011), the decision was taken to retain the problem solving and decision making items and assess whether they adversely affected model fit when tested within the whole model in this study and future studies. With the emotional skills subscale, I separately assessed the four items that dealt with 'my emotions' and the four items that dealt with 'others emotions' to see whether a better fit could be achieved. The 'my emotions' subscale displayed an excellent fit, $\chi^2 = 2.44(2)$, $p = .30$, $\chi^2/df = 1.22$, RMSEA = .03, CFI = 1.00, TLI = .99; whereas the 'others emotions' subscale displayed a poor fit, $\chi^2 = 21.04$, $p < .001$, $\chi^2/df = 10.52$, RMSEA = .21, CFI = .95, TLI = .72. Therefore, I only retained the 'my emotions' items for the emotional skills subscale.

After removing the four 'others emotions' items, the full 43-item model was tested via CFA. The full model displayed a reasonable fit, $\chi^2 = 1380.81(832)$, $p < .001$, $\chi^2/df = 1.66$, RMSEA = .06, CFI = .90, TLI = .89. The only exceptions were the significant χ^2 value and the TLI value which was marginally below the .90 cut-off suggested by Hu and Bentler (1999). However, as the size and complexity of a model can affect its fit (Cheung & Rensvold, 2002; Marsh, Balla, & McDonald, 1988), I believed the fit indices to be adequate for this 43-item model. Results also showed that all items loaded significantly onto their hypothesized factor when tested within the full model providing evidence of convergent validity. This included all items in the troublesome problem solving and decision making subscale which had factor loadings ranging from .70–.84. The average factor loading for the 43-item model was .73, which is considered excellent (Comrey & Lee, 1992). Only one item ("accepting suggestions for improvement from others") had a factor loading less than .40. In addition, results indicated that the correlations between the

life skills subscales ranged from .32 to.78. Correlations above .80 or .85 imply poor discriminant validity (Brown, 2006). Some of the correlations between subscales were close to .80; however, the specific analysis for discriminant validity revealed that all 28 unconstrained models had significantly lower chi-square values than the constrained models (see Table 34). This provided clear evidence for the discriminant validity between

Table 34
Comparison of Chi-square Values for Constrained vs. Unconstrained Models

	Constrained χ^2	Unconstrained χ^2	χ^2 difference test χ^2
Teamwork and goal setting	174.4	106.9	67.5**
Teamwork and social skills	116.0	74.4	41.6**
Teamwork and time management	131.2	71.5	59.7**
Teamwork and emotional skills	123.3	66.4	56.9**
Teamwork and problem solving	101.6	48.1	53.5**
Teamwork and leadership	230.5	173.3	57.2**
Teamwork and communication	110.3	59.5	50.8**
Goal setting and social skills	122.9	68.1	54.8**
Goal setting and time management	109.0	92.7	16.3**
Goal setting and emotional skills	90.8	67.9	22.9**
Goal setting and problem solving	97.1	70.5	26.6**
Goal setting and leadership	207.2	166.4	40.8**
Goal setting and communication	100.5	65.0	35.5**
Social skills and time management	76.7	42.9	33.8**
Social skills and emotions	94.6	61.6	33.0**
Social skills and problem solving	76.0	42.2	33.8**
Social skills and leadership	170.3	126.2	44.1**
Social skills and communication	87.9	58.3	29.6**
Time management and emotional skills	61.0	38.4	22.6**
Time management and problem solving	53.5	35.2	18.3**
Time management and leadership	117.8	80.7	37.1**
Time management and communication	46.3	21.5	24.8**
Emotions skills and problem solving	52.1	37.4	14.7**
Emotions skills and leadership	133.9	96.9	37.0**
Emotions skills and communication	47.4	24.7	22.7**
Problem solving and leadership	121.8	92.6	29.2**
Problem solving and communication	39.1	20.5	18.6**
Leadership and communication	137.1	107.0	30.1**

Note. In all cases, the difference in degrees freedom between the constrained and unconstrained models was 1.
**$p < .01$.

subscales (Anderson & Gerbing, 1988).

During the analyses, competing models were also examined. When tested, the first-order model displayed a poor fit, $\chi^2 = 2918.41(860)$, $p < .001$, $\chi^2/df = 3.39$, RMSEA = .10, CFI = .63, TLI = .59. This indicates that one overriding factor is not appropriate to represent all 43 life skills items. The second-order model displayed mixed results for fit, $\chi^2 = 1475.83(852)$, $p < .001$, $\chi^2/df = 1.73$, RMSEA = .06, CFI = .89, TLI = .88. The χ^2/df value was well below the 3.0 recommended by Kline (2000) and the RMSEA value was .06 which indicates a close fit (Hu & Bentler, 1999). In contrast, the CFI and TLI values were marginally below the .90 cut-off suggested by Hu and Bentler (1999). Given the closeness of the CFI and TFI values to .90 and keeping the complexity/size of the model in mind (Cheung & Rensvold, 2002), I felt that the second-order model provided a reasonable fit. To compare the second-order model with the original eight-factor model, I also conducted a χ^2 difference test. When comparing the second-order model with the original eight-factor model, the χ^2 difference value (95.02) along with the difference in *df* (20), was significant at $p < .01$. Therefore, the original eight-factor model fitted the data best. Nonetheless, given the reasonable fit of the second-order model, it would be appropriate to calculate a total life skills score comprising of scores for the eight life skills subscales.

The internal consistency reliability of each of the eight subscales was also tested. Alpha coefficients were as follows: teamwork (.77), goal setting (.92), time management (.88), emotional skills (.83), interpersonal communication (.83), social skills (.86), leadership (.89), and problem solving and decision making (.90). All were above the .70 criterion recommended for the psychological domain (Nunnally & Bernstein, 1994).

Descriptive Statistics

Table 35 presents the means and standard deviations for each of the eight life skills. For the total sample, the mean scores on the 1–5 response scale of the LSSS revealed that participants felt they were developing life skills through sport. Based on these mean scores,

Table 35
Means and Standard Deviations of LSSS Subscale Scores by Gender and Age Group

Life Skill Subscale	Male (n = 131)	Female (n = 92)	10–14 Years (n = 114)	15–21 Years (n = 109)	Total Sample (N = 223)
Teamwork	4.04 (0.62)	4.14 (0.57)	4.15 (0.59)	4.02 (0.62)	4.08 (0.61)
Goal Setting	3.52 (0.95)	3.88 (0.91)	3.71 (0.97)	3.62 (0.92)	3.67 (0.95)
Time Management	3.28 (1.03)	3.61 (0.96)	3.66 (0.98)	3.15 (0.98)	3.41 (1.01)
Emotional Skills[a]	3.68 (0.88)	3.69 (0.88)	3.74 (0.96)	3.62 (0.78)	3.68 (0.88)
Communication	4.02 (0.76)	4.14 (0.76)	4.05 (0.82)	4.09 (0.70)	4.07 (0.76)
Social Skills	3.96 (0.80)	4.03 (0.84)	4.02 (0.84)	3.96 (0.80)	3.99 (0.82)
Leadership	3.92 (0.66)	4.02 (0.70)	3.97 (0.71)	3.96 (0.65)	3.97 (0.68)
Problem Solving	3.60 (0.90)	3.62 (0.95)	3.75 (0.98)	3.46 (0.82)	3.61 (0.92)

Note. Standard deviations are in parentheses. Subscale scores can range from 1 to 5.
[a]Revised four-item emotional skills subscale.

one could conclude that participants were learning at least ‘some’ (3) and at most ‘a lot’ (4) of life skills through sport. The four life skills which participants perceived they learned the most about were teamwork, interpersonal communication, social skills, and leadership. Despite scoring above 3 (*some*) on the other life skills, participants felt they learned less about emotional skills, goal setting, problem solving and decision making, and time management. To investigate possible gender (male versus female) and age group differences (10–14 year olds versus 15–21 year olds), a series of two-way between-groups ANOVA’s were conducted for each of the life skills. For each of the life skills, the interaction term was non-significant. The main effect for gender was significant for goal setting, $F(1, 219) = 7.69$, $p = .006$, and time management, $F(1, 219) = 4.94$, $p = .027$. Inspection of mean scores showed that females scored higher than males for these life

skills. The main effect for age group was significant for time management, $F(1, 219) = 12.98$, $p = .000$, and problem solving and decision making, $F(1, 219) = 5.61$, $p = .019$. Inspection of mean scores showed that younger participants scored higher than older participants for both life skills.

Discussion

The main purpose of this study was to assess the factor structure of the 47-item LSSS. When tested individually, six of the eight subscales displayed excellent factorial validity evidence. The emotional skills subscale was one of two subscales that displayed an inadequate fit. After removing four items dealing with 'others emotions' the emotional skills subscale displayed an excellent fit. There are several potential reasons why the 'others emotions' items did not provide a good fit. It may have been that youth sport participants as young as 11 years were more familiar in dealing with their own emotions and therefore answered the 'others emotions' items more erratically. As younger participants are at an earlier stage of cognitive development as compared to older participants, it is also possible that they have not yet developed the capacity to deal with others' emotions. Learning to "understand other peoples' emotions", "notice how other people feel", "help others use their emotions to stay focused", and "help other people control their emotions when something bad happens" may have been beyond the cognitive development of younger participants. Nonetheless, given the importance of dealing with other peoples' emotions (Gignac et al., 2005), researchers should be encouraged to develop an 'others emotions' scale. Based on the problems encountered with the items I developed, it may be more fruitful to provide concrete examples using common emotions (e.g., happy, sad, angry, nervous) when assessing whether young people develop these emotional skills

through sport. For example, “notice how other people feel” could be changed to “notice when other people are nervous” or “notice when other people are angry”. In this regard, Jones, Lane, Bray, Uphill, and Caitlin’s (2005) Sport Emotion Questionnaire may be useful for looking at specific emotions that are commonly experienced in sport. Another possibility is that future studies could develop an ‘others emotions’ scale solely for older participants who may be more knowledgeable and practiced in dealing with other peoples’ emotions. The second subscale to display an inadequate fit in this study was the problem solving and decision making subscale. To ensure content coverage, none of the problem solving and decision making items could be removed. Interestingly, the factor loadings for the problem solving and decision making items did not identify any items that were problematic and the inclusion of all items in the full model did not adversely affect model fit. Following the removal of the four ‘others emotions’ items, the full 43-item LSSS displayed an adequate fit. It was notable that assessing the subscales first proved useful in this study, as it helped to refine the emotional skills subscale before assessing the whole model. Additionally, the sometimes contradictory findings for different CFA fit indices, highlighted that a range of fit indices should be used when judging model fit (Hu & Bentler, 1999; Jöreskog, 1993).

The findings of this study provided evidence for the convergent validity of the LSSS with each item loading on its intended factor during CFA (Anderson & Gerbing, 1988). Both correlations between life skills (Brown, 2006) and comparing pairs of life skills using Anderson and Gerbing’s (1988) method provided evidence for the discriminant validity between subscales. The model testing approach recommended by Jackson et al. (2009) showed that the original eight-factor model and a second-order model involving

total life skills could be used in future studies. This was important as perhaps young people require all eight life skills combined to develop in a positive manner. Replicating the findings of Study 3, each of the eight subscales displayed adequate internal consistency reliability in the present study.

The descriptive statistics from the present study indicated that Scottish youth sport participants were developing all eight life skills through sport. In particular, participants felt that they were learning 'a lot' about teamwork, interpersonal communication, social skills, and leadership. Although they indicated that they learned less about emotional skills, goal setting, problem solving and decision making, and time management, it was encouraging to see that participants still learned somewhere between 'some' and 'a lot' about these life skills. Findings from this study also indicated gender and age group differences for some of the life skills. Female youth sport participants scored higher than their male counterparts on goal setting and time management skills, whereas younger participants scored higher on time management and problem solving and decision making as compared to older participants. Given that this was the first study to use the 43-item LSSS, future studies are required to replicate such findings in other samples of youth sport participants before any conclusions can be drawn.

In summary, this study provided evidence for the factorial, convergent, and discriminant validity of the LSSS. As validity should be continually assessed (DeVellis, 2011), future studies should look to replicate such findings. The internal consistency reliability of each of the subscales was also supported in this study. A second form of reliability which has yet to be examined during the scale validation process is test-retest

reliability. The purpose of the next study was to do just this with an independent sample of youth sport participants.

Study 5 – Purpose and Overview

Test-retest reliability is a method used to assess the temporal stability of a scale; that is, how constant scores remain from one occasion to another (DeVellis, 2011). According to Vaughn, Lee, and Kamata (2012), administering a test twice to the same set of subjects and correlating the two measurements is the most straightforward method of assessing reliability. In the present study, a two-week test-retest analysis was performed to establish the reliability of each of the LSSS subscales. Two weeks was deemed appropriate as it was unlikely that perceptions of life skills development would change over this time. In other words, life skills may be expected to change over the course of a sports season but not over a two-week period. Therefore, if the LSSS is a reliable measure of life skills development through sport it should produce similar scores over a two-week period.

Method

Participants

To examine the test-retest reliability of the LSSS, 37 Scottish youth sports participants (M_{age} = 18.96, *SD* = 1.25, age range = 17–21) completed the scale on two separate occasions. Participants were drawn from first year university seminars and met the criteria for being youth sport participants (i.e., between 11–21 years and taking part in sport). The main sports represented were football (*n* = 10), rugby (*n* = 5), athletics (*n* = 5), and field hockey (*n* = 3). In total, 14 respondents took part in 10 other sports (e.g., basketball, American football, karate, etc.). The sample comprised of more male (*n* = 24)

than females (*n* = 13), with an average of 8.47 years (*SD* = 3.87) playing experience. Participants played their primary sport for an average of 6.00 hours per week (*SD* = 3.62).

Procedures

Participants completed the LSSS after seminars which were two-weeks apart. The same period has been used when evaluating the test-retest reliability of measures used to assess relatively stable constructs such as personality traits (Gosling, Rentfrow, & Swann, 2003). Prior to completing the scale, informed consent was obtained from all participants. Participants completed the scale after the researcher gave the same introductory statement which was described in Study 3. Throughout the process participants were encouraged to ask questions if they did not understand anything and were kept on task by the researcher. The scale took approximately 5–10 minutes to complete on each occasion.

Measures

Life skills development. The revised 43-item LSSS (contained within Appendix E) was used to measure the extent to which youth sport participants were learning life skills through their chosen sport. Participants were asked to "rate how much your sport has taught you to perform the skills listed below". Participants responded on a five-point scale ranging from 1 (*not at all*) to 5 (*very much*). Example items included: *teamwork* (7 items; "work with others for the good of the team/ group"), *goal setting* (7 items; "set goals so that I can stay focused on improving"), *time management* (4 items; "assess how much time I spend on various activities"), *emotional skills* (4 items; "understand that I behave differently when emotional"), *interpersonal communication* (4 items; "pay attention to what somebody is saying"), *social skills* (5 items; "maintain close friendships"), *leadership*

(8 items; “know how to motivate others”), and *problem solving and decision making* (4 items; “create as many possible solutions to a problem as possible”).

Data Analysis

Intraclass correlation coefficients were used to assess test-retest reliability. Intraclass correlation coefficients are a measure of reliability which can range from 0, indicating no reliability, to 1, indicating perfect reliability (Weir, 2005). Values above .70 are said to provide evidence of adequate reliability (Mitchell & Jolley, 2001).

Results

To assess test-retest reliability, intraclass correlation coefficients were calculated for each subscale. Intraclass correlation coefficients were as follows: teamwork (.93), goal setting (.93), time management (.92), emotional skills (.87), interpersonal communication (.89), social skills (.86), leadership (.93), and problem solving and decision making (.82).

Descriptive Statistics

Table 36 presents the means and standard deviations for each of the eight life skills. The mean scores for each of the life skills revealed that participants perceived that they developed their life skills through sport. For each life skill, participants rated themselves above 3 (*some*) and generally closer to or above 4 (*a lot*) on the 1–5 scale. The four life skills which participants perceived they learned the most about were interpersonal communication, teamwork, social skills, and leadership. Despite scoring above 3 (*some*) on the other life skills, participants felt they learned less about emotional skills, goal setting, problem solving and decision making, and time management. By eyeballing the data for gender differences, one could see that the only consistent difference across the two

Table 36
Means and Standard Deviations of LSSS Subscales by Gender

Life Skill Subscale	Male (n = 24)	Female (n = 13)	Total Sample (N = 37)
Time 1			
Teamwork	3.95 (0.70)	3.96 (0.80)	3.96 (0.73)
Goal Setting	3.49 (1.10)	3.98 (0.66)	3.67 (0.98)
Time Management	3.34 (1.00)	3.46 (0.98)	3.39 (0.98)
Emotional Skills	3.75 (0.64)	3.69 (0.87)	3.73 (0.72)
Communication	4.10 (0.86)	4.21 (0.61)	4.14 (0.78)
Social Skills	3.83 (0.73)	4.17 (0.75)	3.95 (0.74)
Leadership	3.93 (0.78)	4.01 (0.63)	3.96 (0.72)
Problem Solving	3.55 (0.98)	3.46 (0.87)	3.52 (0.93)
Time 2			
Teamwork	4.15 (0.70)	3.87 (0.88)	4.05 (0.77)
Goal Setting	3.62 (1.19)	3.95 (0.80)	3.73 (1.07)
Time Management	3.30 (1.07)	3.40 (0.98)	3.34 (1.03)
Emotional Skills	3.90 (0.60)	3.81 (0.83)	3.86 (0.68)
Communication	4.26 (0.68)	4.21 (0.65)	4.24 (0.66)
Social Skills	3.98 (0.78)	3.97 (0.77)	3.97 (0.77)
Leadership	3.84 (0.82)	3.92 (0.71)	3.87 (0.78)
Problem Solving	3.49 (0.77)	3.46 (0.88)	3.48 (0.80)

Note. Standard deviations are in parentheses. Subscale scores can range from 1 to 5.

time points was that females scored higher on goal setting. For the other seven life skills, mean scores were similar for female and male participants.

Discussion

As stated earlier, intraclass correlation coefficients above .70 represent adequate reliability (Mitchell & Jolley, 2001). The intraclass correlation coefficients in the present study were all above the .70 criteria, providing evidence for the test-retest reliability of the LSSS over a two-week period. Like validity, reliability is also an ongoing process (DeVellis, 2011). Therefore, future studies should assess the test-retest reliability of the LSSS over different periods of time (e.g., 1–4 weeks) and with younger participants.

Within this study, descriptive statistics revealed that youth sport participants believed they were developing their life skills through sport. Like Study 4, the life skills

which participants learned the most about were interpersonal communication, teamwork, social skills, and leadership, whereas they learned less about emotional skills, goal setting, problem solving and decision making, and time management. The only evident gender difference within this study was that females scored consistently higher on goal setting. The same gender difference for goal setting was found in Study 4. In contrast to Study 4, this study did not reveal any gender difference for time management. By comparing the mean scores for older participants in this study with younger participants in Study 4, it was evident that younger participants scored higher on time management and problem solving and decision making. The same differences were found when comparing younger and older age groups in Study 4. Given the small sample size in the present study, it will be important to investigate if any age group or gender differences are replicated during future studies using the LSSS.

General Discussion

Overall, the evidence from Studies 2–5 suggested that the 43-item LSSS is a promising measure of life skills development through sport. In line with the recommendations on scale development (Clark & Watson, 1995; DeVellis, 2011; Hinkin, 1995), all items contained within the LSSS have been carefully scrutinised during the scale development, refinement, and validation processes. All components of each life skill are represented in the LSSS subscales and five of the eight subscales contain global items. Due to the poor ratings and comments from expert reviews, no global items were retained for the emotional skills and social skills subscales. The global item from the problem solving and decision making subscale was removed as respondents were having difficulty interpreting this item. EFA results suggested that each life skill was best represented by

one factor and CFA results supported the eight-factor structure of the LSSS. CFA results also showed that each item loaded significantly onto its hypothesized factor and each subscale was sufficiently independent of all others, providing evidence for the convergent and discriminant validity of the subscales. Evidence for the internal consistency reliability of the subscales was provided across two studies and evidence for the test-retest reliability of the LSSS was provided in Study 5.

To reiterate, Studies 2–5 provided evidence that the LSSS is a valid and reliable measure of a range of life skills which young people are purported to develop through taking part in sport (Johnston et al., 2013). However, as both validity and reliability should be continually critiqued, assessed and improved (DeVellis, 2011), there is a need to cross-validate the results of these studies with other samples. In particular, follow-up studies should seek to confirm the factor structure of the LSSS and assess the relationships of its subscales with other variables.

Although the majority of evidence supported the validity and reliability of the LSSS and its subscales, it is important to note some problems that were encountered during Studies 3–5. These problems were addressed during the previous sections but a recap is necessary at this point. The first subscale to prove problematic was the teamwork subscale. Specifically, EFA on the teamwork subscale suggested a possible second factor. Given that this second factor was deemed uninterpretable, teamwork was viewed as unidimensional in subsequent studies. Analyses also revealed that one item from the teamwork subscale (i.e., “accepting suggestions for improvement from others”) displayed lower than expected factor loadings during EFA and CFA. Nevertheless, the fit indices for the teamwork subscale were excellent during CFA; therefore, this one item was retained to

ensure content coverage. The second subscale to prove problematic was the problem solving and decision making subscale. Despite displaying a clear unidimensional structure during EFA, this subscale displayed less than adequate fit indices when assessed via CFA. However, the factor loadings of individual items were all above .70 during CFA and were therefore retained within the subscale. The third subscale which proved problematic was the emotional skills subscale. This subscale displayed poor fit indices when assessed via CFA. Nonetheless, removing the items dealing with 'others emotions' meant that the subscale displayed excellent fit indices. In sum, slight problems were encountered with three of the eight life skills subscales during Studies 3–5. Importantly, none of the problems were detrimental to the factor structure of the full 43-item scale.

In conclusion, the LSSS is a much needed measure of life skills development through sport. This scale will allow researchers and practitioners to accurately measure whether young people are developing a range of life skills through sport. The LSSS can also be used to investigate aspects of the sporting environment (e.g., the coach, peers, and parents) which may be related to life skills development. Furthermore, the scale will allow researchers to assess whether the life skills young people learn through sport are related to other well-being outcomes. Finally, this scale can help to guide and evaluate programmes, strategies, and interventions that seek to foster young peoples' development through sport.

Overview of Phase 3

Phase 3 of this programme of research involved conducting a study to re-test Benson and Saito's (2001) conceptual framework for youth development using the LSSS. Chapter 5 describes Study 6 which assessed the relationship between coach autonomy support, life skills development, and psychological well-being using a sample of 326 youth

sport participants. The factor structure of the LSSS was re-tested during this study and the relationships between the LSSS subscales and the other variables measured in the study was also examined.

Chapter 5 – Re-testing Benson and Saito's (2001) Framework Using the LSSS

Study 6 – Introduction

Young people face a number of challenges in today's world and to succeed in our highly competitive and ever-changing global economy they must learn an abundance of life skills (Gould & Carson, 2010). Life skills have been defined as the skills that are required to deal with the demands and challenges of everyday life (Hodge & Danish, 1999). Examples of life skills are teamwork, goal setting, time management, and emotional skills. As explained in Chapter 4, life skills allow young people to flourish in various areas of their lives. According to the World Health Organisation (1999), life skills are important for preparing adolescents for the future and ensuring their healthy development. Others have deemed life skills, or what they term employability skills, as essential for success in today's jobs market (Hanbury & Malti, 2011).

There has been a growing acknowledgement that young people learn such life skills not just in school but also on the sports field (McCluskey & Treffinger, 1998). As the most popular leisure time activity for young people (Hansen & Larson, 2007), sport has been proposed as an ideal setting for young people to learn life skills. Research suggests that young people develop an array of life skills through sport including: teamwork (Holt, 2007), goal setting (Holt et al., 2008), time management (Fraser-Thomas & Côté, 2009), emotional skills (Brunelle et al., 2007), communication (Gould et al., 2007), social skills (Gould et al., 2012), leadership (Camiré et al., 2009), and problem solving and decision making (Strachan et al., 2011). The present study focused on these eight life skills which are assessed by the LSSS.

These individual life skills, along with the whole set of eight life skills, are important for young peoples' development. In this regard, Benson (2006) suggested that

the more strengths or life skills a young person possesses the better off they will be on a variety of other outcomes. This has been termed the 'pile-up' effect. Reviews of the youth development literature have supported the pile-up effect, with the total number of strengths young people possess being positively related to academic, behavioural, and psychological outcomes (Benson, 2006; Eccles & Gootman, 2002). These findings fit with the premise that the more life skills young people learn through sport, the more likely they will develop in a positive manner (Camiré et al., 2012).

Despite the importance of life skills development for young people, little is known about either the antecedents or consequences of developing life skills. Therefore, the purpose of this study was to investigate a mediation model whereby the coaching climate was related to life skills development; which, in turn, was related to participants' psychological well-being. This framework for youth development theory and research was developed by Benson and Saito (2001), who proposed that youth development inputs (e.g., the coaching climate) serve to develop young peoples' strengths (e.g., their life skills), and the development of these strengths promotes young peoples' well-being. Using this framework, researchers can investigate both the antecedents and consequences of life skills development in any domain. To the best of the author's knowledge, the studies contained within this thesis were the first to test this framework within youth sport.

Antecedents of Life Skills Development

Researchers have proposed various factors that promote the learning of life skills including fun/enjoyment, a sense of belonging (Hellison & Walsh, 2002), interactions with a caring adult, opportunities to acquire life skills (Petitpas et al., 2005), affiliation with peers, self-referenced competency, effort expenditure, and a task climate (MacDonald et

al., 2011). Within sport, the coach has been highlighted as playing a central role in young people developing their life skills (Gould et al., 2007). According to Camiré and colleagues (2012), factors critical to life skills development include a coach's philosophy, relationship skills, competence, and accessibility. Recent research by Vella et al. (2013) also showed that the coach-athlete relationship and a coach's transformational leadership behaviours are positively related to the development of life skills in Australian youth soccer players.

The present study focused on investigating whether coach autonomy support was positively related to participants' development of life skills. Autonomy support is part of self-determination theory and refers to the coach displaying behaviours such as: (1) providing choice to athletes, (2) giving a rationale for tasks, (3) acknowledging athletes' feelings and perspectives, (4) providing opportunities for initiative taking and independent work, (5) delivering competence feedback, (6) avoiding coaching behaviours that seek to control athletes, and (7) reducing the perception of ego involvement in sport (Mallett, 2005). According to self-determination theory, activity involvement generally has positive effects when combined with autonomy support (Grolnick, Ryan, & Deci, 1991). This suggests that autonomy support within youth sport should be positively related to participants' life skills development. In this regard, a qualitative study found that effective American youth sport coaches use autonomy support to promote life skills development in athletes (Flett et al., 2013). Another qualitative study by Cowan, Taylor, McEwan, and Baker (2012) investigated the link between coach autonomy support and life skills development in disadvantaged youth participating in a British soccer programme. These researchers concluded that applying autonomy supportive behaviours was challenging for

coaches working with disadvantaged groups. Studies in sport have also shown that autonomy support is positively associated with other outcomes including higher self-esteem (Standage & Gillison, 2007), positive affect, and life satisfaction (Smith et al., 2007). Building on such research, the current study investigated whether life skills development mediates the relationship between coach autonomy support and participants' psychological well-being.

Consequences of Life Skills Development

Previous research has found sport to be positively associated with outcomes such as academic performance, college attendance (Barber et al., 2001), career development (Berrett, 2006), social development (Brunelle et al., 2007), and psychological well-being (Barber et al., 2001; Micheli et al., 1998). However, little is known about how or why young people gain these positive outcomes from sport. According to Benson and Saito's (2001) framework, the life skills young people learn through sport should be related to these outcomes. The current study focused on the outcome of psychological well-being. Although, there is no agreed definition of psychological well-being, most definitions have emphasised positive psychological states as opposed to the absence of negative states (Reinboth & Duda, 2006). As explained in Chapter 3, it is generally accepted that psychological well-being is best assessed by several indicators (Wilson et al., 2006), with this study using measures of self-esteem, positive affect, and satisfaction with life. Self-esteem was defined as "a person's evaluation of, or attitude toward, him- or herself" (Pyszczynski et al., 2004, p. 435). Positive affect was defined as "the extent to which an individual experiences pleasurable engagement with the environment" (Crawford & Henry,

2004, p. 246). Satisfaction with life was defined as "a global assessment of a person's quality of life according to his/her chosen criteria" (Shin & Johnson, 1978, p. 478).

Research from non-sport settings suggests that at least some of the eight life skills should be positively related to self-esteem, positive affect, and satisfaction with life. Firstly, goal attainment (Judge, Bono, Erez, & Locke, 2005), time management (Bond & Feather, 1988), emotional skills, social skills (Riggio et al., 1990), communication (McCroskey & Richmond, 1990), and leadership (Bass, 1990) have all been positively associated with self-esteem. Secondly, self-concordant goals – goals which are of interest and value to a person – (Sheldon & Elliot, 1999) and emotional skills (Brackett & Mayer, 2003; Kong & Zhao, 2013) have been positively related with positive affect. Finally, goal attainment (Judge et al., 2005), self-concordant goals (Sheldon & Elliot, 1999), emotional skills (Bastian et al., 2005), and social skills (Segrin & Taylor, 2007) have been positively associated with life satisfaction. As the majority of these studies took place in university settings using undergraduate students, it was difficult to predict whether such results would translate to youth sport.

The Present Study

The overall purpose of this study was to investigate the relationships between coach autonomy support, participants' life skills development within sport, and psychological well-being. The first aim of the study was to re-assess the factor structure and reliability of the LSSS, and to investigate the relationships between the LSSS subscales and the other study variables. The second aim was to examine whether Scottish youth sport participants were developing the eight life skills within sport. It was expected that participants would report developing these life skills as previous research has indicated that young people

learn these life skills through sport (e.g., Holt, 2007; Holt et al., 2008; Fraser-Thomas & Côté, 2009). The third aim of this study was to assess whether coach autonomy support was positively related to each of the eight life skills. Based on previous studies in youth sport (e.g., Flett et al., 2013), it was anticipated that coach autonomy support would be positively related to each of the eight life skills. The fourth aim was to investigate whether developing each of the eight life skills – along with the whole set of life skills – was positively related to participants' self-esteem, positive affect, and satisfaction with life. The last aim of the study was to assess whether participants' life skills development mediates the relationships between coach autonomy support and psychological well-being. Based on Benson and Saito's (2001) framework, it was expected that developing life skills within sport will mediate the relationships between coach autonomy support and participants' psychological well-being. Exploration of this mediation model would help explain the processes by which coach autonomy support is related to psychological well-being in youth sport participants.

Method

Participants

In total, 326 Scottish youth sports participants (M_{age} = 13.81, *SD* = 1.52, age range = 11–18 years) completed measures assessing coach autonomy support, life skills development through sport, and psychological well-being. The main sports represented were football (*n* = 80), dance (*n* = 44), rugby (*n* = 36), hockey (*n* = 24), basketball (*n* = 22), track and field (*n* = 15), gymnastics (*n* = 14), swimming (*n* = 13), and taekwondo (*n* = 11). In total, 67 respondents took part in 29 other sports (e.g., horse riding, badminton, golf, etc.). The sample had more male (*n* = 189) than female participants (*n* = 137). Participants

had played their sport for an average of 5.74 years (*SD* = 3.66) and spent an average of 4.14 hours per week in this sport (*SD* = 3.75).

Procedures

Following approval from the University of Stirling's ethics committee, participants were recruited by contacting local P.E. teachers. Initial contact was made via email, telephone, or face-to-face meetings and permission to survey the school was granted. Prior to participants completing any surveys, informed consent was obtained from either the youth sport participant (if 16 years or older) or the participant's parent or guardian (if less than 16 years). Participants completed the survey (see Appendix E) after the researcher gave a standardised introductory statement. This statement explained the purpose of the study, that there was no right or wrong answers, and that all information would be kept confidential. Throughout the process participants were encouraged to ask questions if they did not understand anything and were kept on task by the researcher. The survey took approximately 15–20 minutes to complete.

Measures

Coach autonomy support. Perceptions of coach autonomy support were assessed with the 6-item version of the Sport Climate Questionnaire (Deci, 2001). This questionnaire allows athletes to specify how they rate their coach in terms of autonomy support. Example items include "I feel understood by my coach" and "My coach listens to how I would like to do things." Each item is rated on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). This scale has displayed adequate reliability and validity within youth sport (Lim & Wang, 2009). In the current sample, the scale displayed

a Cronbach's alpha coefficient of .94, which is above the .70 necessary for the psychological domain (Nunnally & Bernstein, 1994).

Life skills development. The 43-item LSSS was used to measure the extent to which youth sport participants were developing life skills through playing their chosen sport. Participants were asked to "rate how much your sport has taught you to perform the skills listed below." Participants responded on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). Example items included: *teamwork* (7 items; "help build team/group spirit"), *goal setting* (7 items; "set goals for practice"), *time management* (4 items; "manage my time well"), *emotional skills* (4 items; "use my emotions to stay focused"), *interpersonal communication* (4 items; "pay attention to peoples' body language"), *social skills* (5 items; "get involved in group activities"), *leadership* (8 items; "organise team/group members to work together"), and *problem solving and decision making* (4 items; "think carefully about a problem"). As this was only the second use of the LSSS, the factor structure of the scale was re-assessed using CFA. The full eight-factor model displayed an adequate fit according to the criteria adopted in Study 4 of this thesis, χ^2 = 1549.14(832), $p < .001$, $\chi^2/df = 1.86$, RMSEA = .05, CFI = .91, TLI = .90. All items loaded significantly onto their hypothesized factor, with factor loadings ranging from .50–.90 and an average factor loading of .73, which is considered excellent (Comrey & Lee, 1992). I also tested a second-order model with total life skills as a higher order factor which represented all eight life skills. This model displayed an adequate fit, χ^2 = 1643.98(852), $p < .001$, $\chi^2/df = 1.93$, RMSEA = .05, CFI = .91, TLI = .90, suggesting that each of the eight subscales can also be combined to calculate a total life skills score. This is in line with previous youth development through sport research which combined various life skills into

a total score (e.g., Gould et al., 2012; Vella et al., 2013). Each of the subscales of the LSSS and total life skills also displayed adequate internal consistency reliability: teamwork (.83), goal setting (.91), time management (.90), emotional skills (.88), interpersonal communication (.81), social skills (.91), leadership (.91), problem solving and decision making (.91), and total life skills (.96).

Self-esteem. Self-esteem was measured using the general-self subscale of the Self-Description Questionnaire II (Marsh et al., 1985). Five items of the subscale are phrased positively (e.g., "Most things I do, I do well") and five items are written to reflect low self-esteem (e.g., "Overall, I am a failure"). Participants responded on a 7-point scale ranging from 1 (*False*) to 7 (*True*). The reliability of this subscale has been supported with youth sport participants (Adie et al., 2010). The Cronbach's alpha coefficient was .85 for the current sample.

Positive affect. Positive affect was assessed using the positive subscale of the Positive and Negative Affect Schedule (Watson et al., 1988). This 10-item scale asks participants to rate how a word (e.g., "inspired" or "active") describes their feelings "in general." The participants rated the extent to which they feel that way on a 5-point scale ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). This scale has displayed adequate reliability and model fit with youth sport participants (Crocker, 1997). The current sample displayed a Cronbach's alpha coefficient of .91.

Satisfaction with life. Satisfaction with life was measured using the Satisfaction With Life Scale (Diener et al., 1985). This 5-item scale asks participants to indicate their agreement with certain statements (e.g., "I am satisfied with life"). Participants respond on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). This scale has

displayed adequate model fit and reliability with adolescents (Pons et al., 2000). The Cronbach's alpha coefficient was .88 for the current sample.

Analysis Strategy

The mediation hypotheses were tested for all three dependent variables: self-esteem, positive affect, and satisfaction with life. As statistical techniques to test mediation (e.g., the Baron & Kenny method, 1986) suffer from problems including low statistical power, a lack of quantification of the intervening effect, and the inability to test multiple mediators simultaneously (Hayes, 2009), I employed non-parametric bootstrapping analysis (Hayes, 2013). This analysis allows one to estimate direct and indirect effects in models with multiple mediators and has been shown to perform better than other techniques in terms of statistical power and Type I error control (Hayes, 2009). To test for mediation I used the PROCESS macro for SPSS (Hayes, 2013) with 20,000 bootstrap resamples and 95% bias corrected CIs. There is evidence of mediation, or a specific indirect effect, when zero is not included within the lower and upper bound CIs.

Results

Preliminary Analysis

Three participants had more than 5% missing data and were therefore deleted from the sample (DiLalla & Dollinger, 2006). For the remaining sample, of the 74 items each individual item was left blank an average of 5.54 times across the whole sample (*SD* = 3.49; range = 0–14). Missing data analysis revealed no pattern to these missing values, rather the data was missing at random. As the percentage of missing data was low (1.71%) and I wanted to minimise lost data, a mean substitution was performed. Mean substitution is a valid approach for dealing with missing data when a small percentage of data is

missing from a sample of the current study's size (Tabachnick & Fidell, 2007). Prior to conducting the main analyses, the data were screened for normality. Skewness values ranged from -1.73 to -.38 and kurtosis values ranged from -.77 to 3.07, indicating reasonable normality (Curran et al., 1996).

Descriptive Statistics

Table 37 presents the means, scale ranges, standard deviations, reliability coefficients, and correlations for all variables. The mean score for coach autonomy support was 5.62 on the 1–7 scale, indicating that participants felt their coaches were displaying high levels of autonomy supportive behaviours. The mean scores on the 1–5 response scale of the LSSS revealed that participants felt they were developing life skills through sport. Based on these mean scores, one could conclude that participants were learning at least 'some' (3) life skills and at most 'a lot' (4) of life skills through sport. The four life skills which participants perceived they learned the most about were teamwork (4.03), interpersonal communication (3.99), social skills (3.96), and goal setting (3.87). Despite scoring above 3 (*some*) on the other four life skills, participants felt they learned less about leadership (3.84), time management (3.69), emotional skills (3.59), and problem solving and decision making (3.47). Table 38 outlines the mean scores and standard deviations by gender and age group. To investigate possible gender (male versus female) and age group differences (11–14 year olds versus 15–21 year olds), a series of two-way between-groups ANOVA's were conducted for each of the life skills. For each of the life skills, the interaction term was non-significant. The main effect for gender was significant for goal setting, $F(1, 322) = 4.19$, $p = .042$, and time management, $F(1, 322) = 6.22$, $p = .013$.

Table 38
Means and Standard Deviations of LSSS Subscale Scores by Gender and Age Group

Life Skill Subscale	Male (n = 188)	Female (n = 138)	11–14 Years (n = 227)	15–21 Years (n = 99)
Teamwork	4.02 (0.69)	4.04 (0.67)	3.95 (0.72)	4.21 (0.54)
Goal Setting	3.77 (0.86)	4.00 (0.83)	3.84 (0.85)	3.94 (0.86)
Time Management	3.58 (0.96)	3.83 (1.01)	3.67 (1.01)	3.71 (0.96)
Emotional Skills	3.66 (1.01)	3.49 (1.13)	3.43 (1.11)	3.95 (0.86)
Communication	3.98 (0.86)	4.01 (0.91)	3.95 (0.90)	4.08 (0.84)
Social Skills	3.91 (0.89)	4.04 (0.75)	3.85 (0.89)	4.22 (0.64)
Leadership	3.74 (0.85)	3.98 (0.75)	3.76 (0.83)	4.03 (0.74)
Problem Solving	3.56 (0.97)	3.35 (1.10)	3.37 (1.04)	3.69 (0.98)

Note. Standard deviations are in parentheses. Subscale scores can range from 1 to 5.

Inspection of mean scores showed that females scored higher than males for these life skills. The main effect for age group was significant for teamwork, $F(1, 322) = 9.78$, $p = .002$, emotional skills, $F(1,322) = 14.96$, $p = .000$, social skills, $F(1, 322) = 12.54$, $p = .000$, leadership, $F(1, 322) = 6.90$, $p = .009$, and problem solving and decision making, $F(1, 322) = 5.62$, $p = .018$. Inspection of mean scores showed that older participants scored higher than younger participants for these five life skills. By consulting Table 37, one can see that the mean scores for the psychological well-being indicators were: 4.61 on the 1–6 scale for self-esteem, 4.16 on the 1–5 scale for positive affect, and 5.33 on the 1–7 scale for satisfaction with life. These scores meant that participants scored highly on each of the psychological well-being indicators. The correlations in Table 37 revealed that the relationships between coach autonomy support and all other variables (the eight life skills and three psychological well-being indicators) were significant and positive. In general, each of the eight life skills was also positively related to self-esteem, positive affect, and satisfaction with life.

Main Analyses

Figures 10–12 display unstandardized regression coefficients for each of the three mediation models. These models allow for the investigation of the relationships between all measured variables. In all models, coach autonomy support was included as the independent variable. Teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making were included as parallel mediators. The first model included self-esteem as the dependent variable, the second model had positive affect as the dependent variable, and the third model included satisfaction with life as the dependent variable. Results of the indirect effects are presented in Table 39. This table tells us whether there is a total indirect effect and what effect, if any, each of the mediators are having. The total indirect effect also represents the indirect effect of total life skills as it is the sum of the indirect effects for each mediator. Lastly, Figure 13 displays the mediation model when total life skills were included as a sole mediator.

The mediational models showed that coach autonomy support was positively related to all eight mediators: teamwork ($\beta = .16$, $p < .001$), goal setting ($\beta = .17$, $p < .001$), time management ($\beta = .18$, $p < .001$), emotional skills ($\beta = .15$, $p < .001$), interpersonal communication ($\beta = .20$, $p < .001$), social skills ($\beta = .19$, $p = .001$), leadership ($\beta = .20$, $p < .001$), and problem solving and decision making ($\beta = .17$, $p < .001$). However, consistent relationships were not seen between each of the eight life skills and the psychological well-being indicators. Only leadership was positively related to self-esteem ($\beta = .28$, $p = .001$). Goal setting ($\beta = .16$, $p < .01$), time management ($\beta = .18$, $p < .001$), and interpersonal communication ($\beta = .13$, $p < .05$) were positively related to positive affect. Lastly, only

Table 39
Indirect Effects of Coach Autonomy Support on Psychological Well-being (Self-esteem, Positive Affect and Satisfaction With Life) Through Each Mediator

	Bootstrap effect	Normal effect	Normal theory tests			95% CI
			SE	*z*	*p*	
Self-esteem						
Total effect	.07					[.03, .11]
Teamwork	-.01	-.01	.01	-.64	.52	[-.05, .02]
Goal setting	.01	.01	.01	.88	.37	[-.01, .04]
Time management	.01	.01	.01	.59	.55	[-.02, .03]
Emotional skills	-.00	-.00	.01	-.47	.64	[-.03, .01]
Communication	.02	.02	.01	1.59	.11	[-.00, .05]
Social skills	.01	.01	.01	.34	.73	[-.03, .04]
Leadership	.06	.05	.01	2.86	.00	[.02, .11]
Problem solving	-.02	-.02	.01	-2.04	.04	[-.05, -.01]
Model	$F(9, 313) = 7.13$***, $R^2 = .17$					
Positive affect						
Total effect	.09					[.05, .14]
Teamwork	.01	.01	.01	.50	.61	[-.02, .03]
Goal setting	.03	.03	.01	2.64	.01	[.01, .06]
Time management	.03	.01	.01	2.96	.00	[.01, .06]
Emotional skills	-.00	-.00	.01	-.55	.58	[-.02, .01]
Communication	.03	.03	.02	2.21	.03	[.00, .05]
Social skills	.02	.02	.02	1.56	.12	[-.01, .05]
Leadership	-.00	-.00	.02	-.36	.72	[-.04, .03]
Problem solving	-.01	-.01	.01	-1.01	.31	[-.03, .01]
Model	$F(9, 313) = 7.53$***, $R^2 = .17$					
Satisfaction with life						
Total effect	.08					[.02, .15]
Teamwork	.02	.02	.02	1.01	.31	[-.02, .08]
Goal setting	.01	.01	.02	.70	.48	[-.02, .06]
Time management	.04	.04	.02	2.07	.04	[.01, .10]
Emotional skills	-.02	-.02	.01	-1.40	.16	[-.06, .01]
Communication	.04	.04	.02	1.60	.11	[-.01, .09]
Social skills	-.02	-.02	.02	-.98	.33	[-.08, .02]
Leadership	.02	.02	.03	.84	.40	[-.04, .09]
Problem solving	-.01	-.01	.02	-.79	.43	[-.05, .01]
Model	$F(9, 313) = 6.04$***, $R^2 = .15$					

Note. Bootstrap generated confidence intervals. CI = confidence interval.
***$p < .001$

time management was positively related to satisfaction with life ($\beta = .21$, $p < .05$).

To test for mediation, I ran three separate models for each indicator of

psychological well-being. Firstly, I ran a model with self-esteem as the dependent variable (Figure 10). According to the bootstrap procedure, the total effect of coach autonomy support on self-esteem was significant (β = .19, $p < .001$). When the mediators were

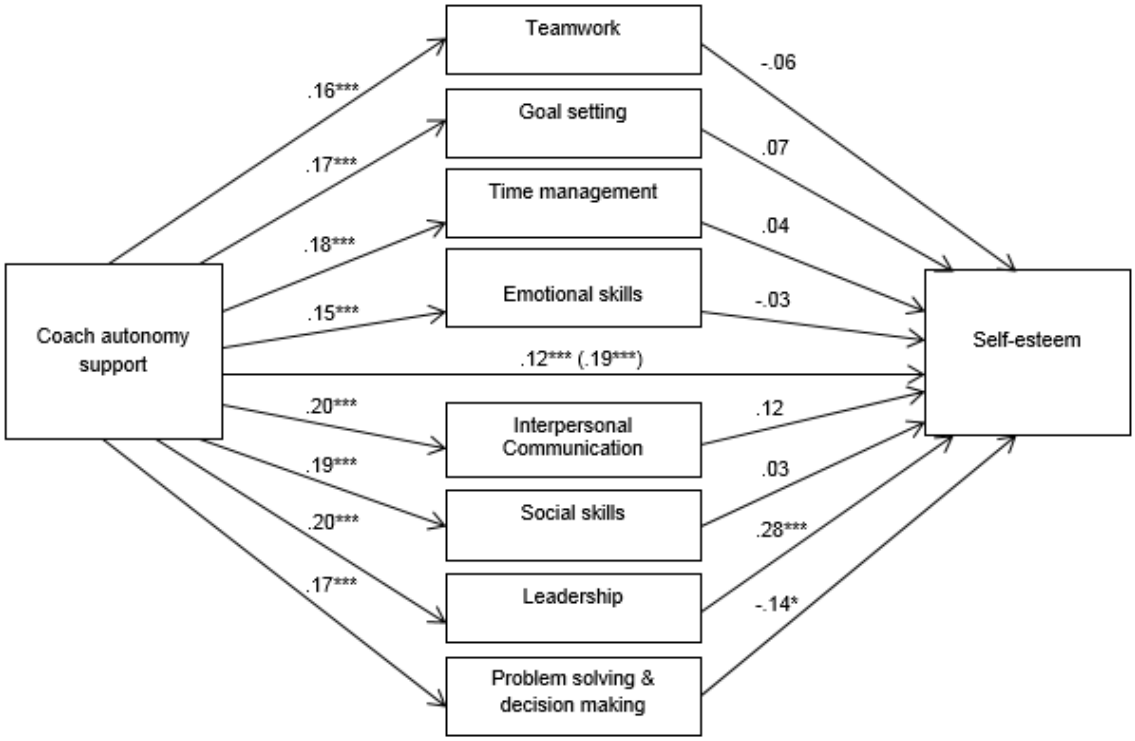

Figure 10. Regression model predicting self-esteem. Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on self-esteem is outside the parentheses. The total effect is inside the parentheses. *$p < .05$, **$p < .01$, ***$p < .001$.

entered into the model, the direct effect of coach autonomy support on self-esteem was reduced but still significant (β = .12, $p = .001$), suggesting partial mediation. Of the proposed mediators (see Table 39) only leadership displayed a significant indirect effect, β = .06, $p < .01$, 95% CI = [.02, .11]. Thus, the effect of coach autonomy support on self-esteem was partially mediated by leadership.

Secondly, I ran a model with positive affect as the dependent variable (Figure 11). According to the bootstrap procedure, the total effect of coach autonomy support on positive affect was significant (β = .18, $p < .001$). When the mediators were entered into

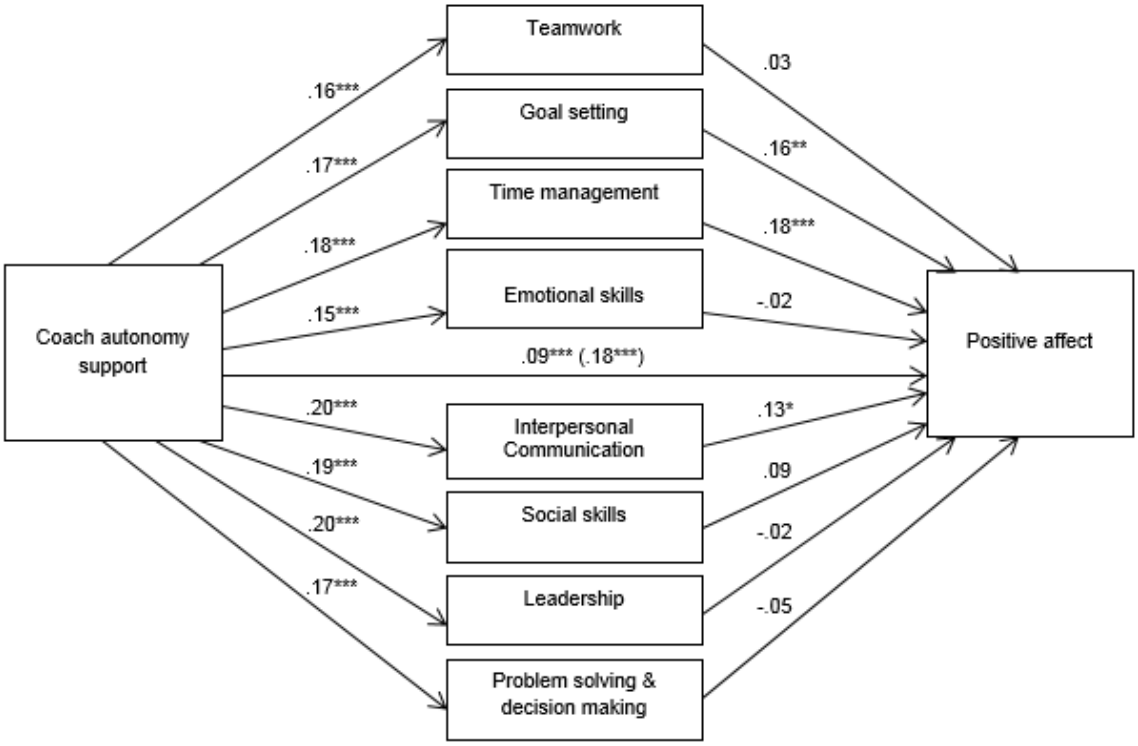

Figure 11. Regression model predicting positive affect. Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on positive affect is outside the parentheses. The total effect is inside the parentheses. *p < .05, **p < .01, ***p < .001.

the model, the direct effect of coach autonomy support on positive affect was still significant (β = .09, p < .001) although reduced, suggesting partial mediation. Of the proposed mediators (see Table 39), goal setting, β = .03, p < .01, 95% CI = [.01, .06], time management, β = .03, p < .01, 95% CI = [.01, .07], and interpersonal communication, β = .03, p < .05, 95% CI = [.00, .05], displayed significant indirect effects. Thus, the effect of coach autonomy support on positive affect was partially mediated by goal setting, time management, and interpersonal communication.

Thirdly, I ran a model with satisfaction with life as the dependent variable (Figure 12). According to the bootstrap procedure, the total effect of coach autonomy support on satisfaction with life was significant (β = .27, p < .001). When the mediators were entered into the model, the direct effect of coach autonomy support on satisfaction with life was

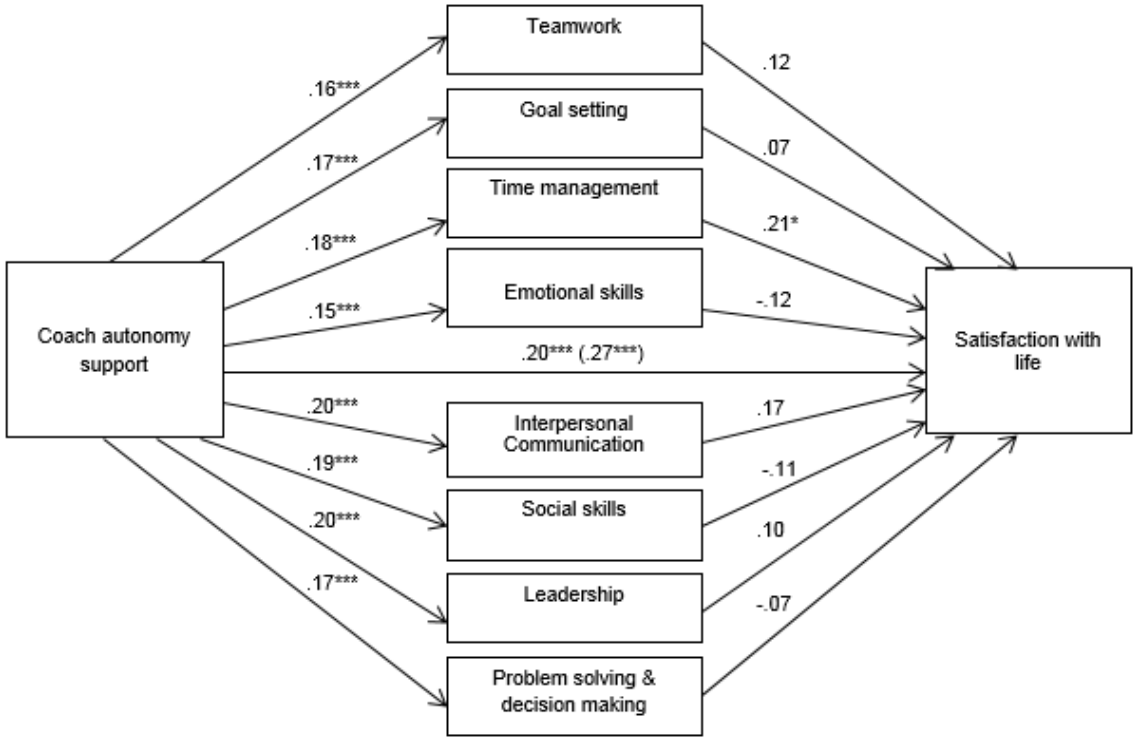

Figure 12. Regression models predicting satisfaction with life. Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on satisfaction with life is outside the parentheses. The total effect is inside the parentheses.
*p < .05, ***p < .001.

reduced but still significant (β = .20, p < .001), suggesting partial mediation. Of the proposed mediators (see Table 39) only time management displayed a significant indirect effect, β = .04, p < .05, 95% CI = [.01, 10]. Thus, the effect of coach autonomy support on satisfaction with life was partially mediated by time management.

Finally, I ran three models which included total life skills as the mediator (Figure 13). Model A included self-esteem as the dependent variable, Model B included positive affect as the dependent variable, and Model C included satisfaction with life as the dependent variable. The three models showed that coach autonomy support was positively related to total life skills (β = .18, p <.001). Additionally, total life skills were positively related to self-esteem (β = .31, p <.001), positive affect (β = .47, p <.001), and satisfaction with life (β = .34, p <.01). For each model, results showed that when total life

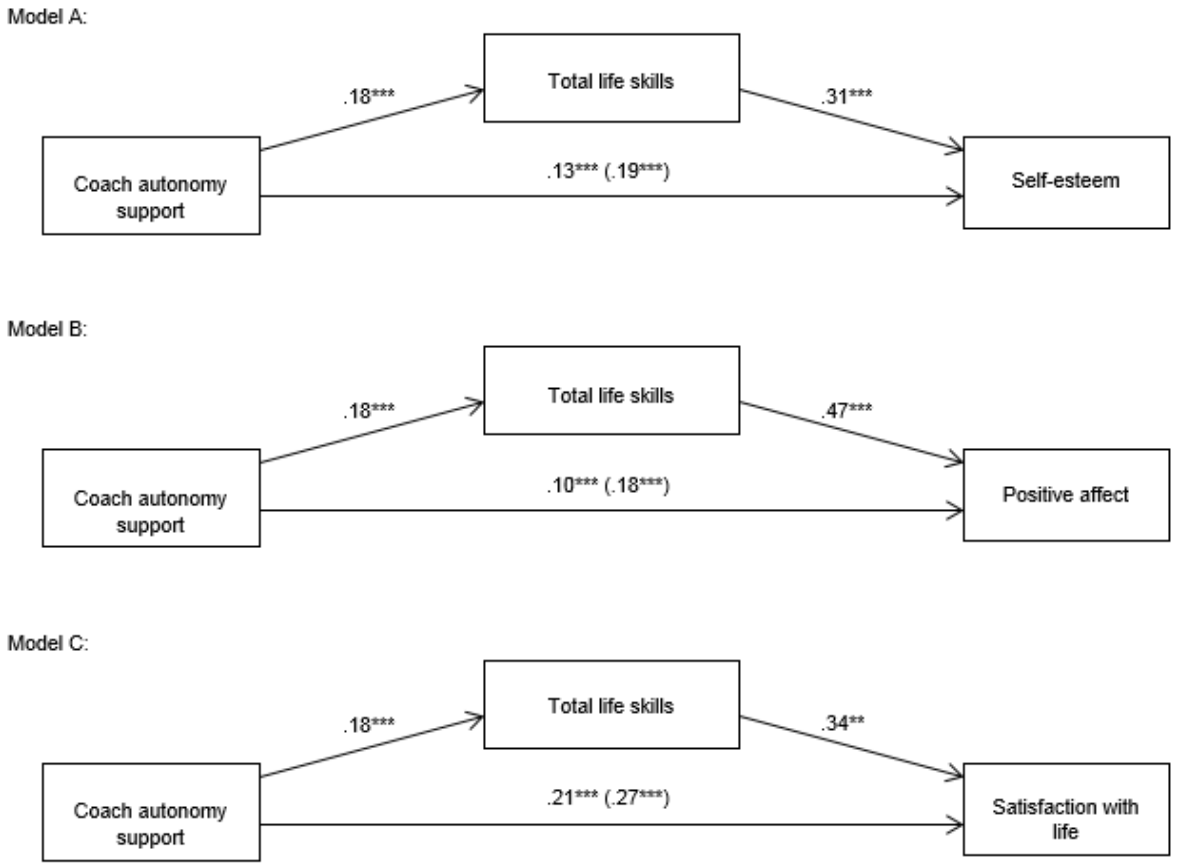

Figure 13. Regression models for total life skills. Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on each indicator of psychological well-being is outside parentheses. The total effects are inside the parentheses.
$^{**}p < .01$, $^{***}p < .001$.

skills was entered as a mediator, the direct effect of coach autonomy support on self-esteem, positive affect, and satisfaction with life was reduced but still significant. Furthermore, the results from Table 39 indicate a total indirect effect (which represents total life skills) for each of the three mediational models: self-esteem, β = .07, 95% CI = [.03, 11]; positive affect, β = .09, 95% CI = [.05, 14]; and satisfaction with life, β = .08, 95% CI = [.02, 15]. Combined, these findings tell us that total life skills partially mediated the relationships between coach autonomy support and participants' psychological well-being.

Discussion

Further evidence for the eight-factor structure of the LSSS was provided via CFA in this study. Like Studies 3 and 4, evidence for the internal consistency reliability of the eight subscales was also provided. Most subscales of the LSSS were positively correlated with the variables which they ought to be related to (i.e., coach autonomy support and psychological well-being). This provided evidence for the 'relationship with other variables' aspect of *The Standards* (1999). Based on these results, it appears that the LSSS is a reliable and valid measure for investigating life skills development through sport. Using the LSSS, researchers can thoroughly assess the degree to which youth sport participants are learning these eight life skills across sports, competitive levels, and coaching cultures. In practical terms, coaches and administrators can use the LSSS to examine whether their efforts to develop these life skills in athletes are effective.

The findings from this study confirmed the results of previous research which reported that young people learn the following life skills through sport: teamwork (Holt, 2007), goal setting (Holt et al., 2008), time management (Fraser-Thomas & Côté, 2009), emotional skills (Brunelle et al., 2007), communication (Gould et al., 2007), social skills (Holt & Sehn, 2008), leadership (Camiré et al., 2009), and problem solving and decision making (Strachan et al., 2011). Like Studies 4 and 5 of this thesis, participants in this study learned most about teamwork, interpersonal communication, and social skills, whereas they learned less about time management, emotional skills, and problem solving and decision making. In contrast to Studies 4 and 5, participants in this study felt they learned slightly more about goal setting as compared to leadership. Regarding gender differences, this study replicated the results of Studies 4 and 5 by finding that females

scored higher on both goal setting and time management. Another interesting finding from this study was that older participants scored higher on teamwork, emotional skills, social skills, leadership, and problem solving and decision making. This was in contrast to Study 4, which found that younger participants scored higher on time management and problem solving and decision making as compared to older participants. In sum, alongside previous research the present study helps form a persuasive argument that sports help young people to develop their life skills. There are a number of practical strategies coaches could use to teach such life skills. For example, coaches could use team-building activities to promote teamwork skills, include 'homework time' on road trips to promote time management, facilitate group discussions to teach communication skills, promote leadership skills by asking athletes to organise the warm-up, and encourage players to think about and solve their performance difficulties to promote problem solving skills.

Like Flett and colleagues (2013) qualitative study, the current study found that coach autonomy support was positively related to participants' life skills development. This result suggests that coach autonomy support plays an important role in ensuring that youth sport participants develop the eight life skills within sport. In practice, this means that coaches should listen to their athletes, allow athletes to share their feelings, offer choice in training, provide opportunities for initiative taking and independence, and avoid controlling behaviors. Such a coaching climate should help ensure that participants experience positive youth development through sport.

Along with coach autonomy support, it seems plausible that other factors account for young people developing their life skills through sport. In this regard, coaches can

teach life skills directly or they may promote life skills indirectly by relying on the sport to teach valuable lessons (Holt et al., 2008). For instance, a coach may teach goal setting directly by explaining the principles of successful goal setting to an athlete, whereas an athlete may learn social skills indirectly by interacting with their teammates. Future research using the LSSS alongside observational or interview-based approaches could examine direct and indirect strategies for teaching life skills through sport.

In their framework for youth development, Benson and Saito (2001) suggested that the life skills young people learn within sport should be related to other well-being outcomes. For individual life skills, mediation models from this study generally suggested that this was not the case. Only a small number of life skills were positively related to the psychological well-being indicators when tested within the mediation models. Only the learning of leadership skills were positively associated with participants' self-esteem. Goal setting, time management, and interpersonal communication were positively related to positive affect. Only time management skills were positively associated with participants' satisfaction with life. Thus, it seems that only certain life skills are positively related to young peoples' psychological well-being. It is plausible that the cross-sectional design of the study meant that few relationships were found between individual life skills and the psychological well-being indicators. Perhaps life skills have an effect on young peoples' psychological well-being over an extended period of time. For example, a young person low in self-esteem may learn social and interpersonal communication skills within sport over a two-year period and then show an increase in self-esteem. Future longitudinal studies could investigate the effect of life skills development on psychological well-being over time.

Researchers from sport (Camiré et al., 2012) and developmental psychology (Benson, 2006; Eccles & Gootman, 2002) have suggested that the more life skills young people possess the more likely they will develop positively. This idea has been termed the pile-up effect (Benson, 2006). Results from this study support the notion of a pile-up effect with total life skills being positively related to self-esteem, positive affect, and satisfaction with life. This indicates that the total life skills a young person learns through sport has a greater relationship with psychological well-being than any individual life skill. Based on these findings, researchers and practitioners should advise coaches to ensure that youth sport participants' develop a range of life skills.

Benson and Saito's (2001) framework suggested that life skills development should mediate the relationship between coach autonomy support and participants' psychological well-being. Like previous research (e.g., Smith et al., 2007; Standage & Gillison, 2007), this study showed a direct relationship between coach autonomy support and each of the psychological well-being indicators. This study also showed that individual life skills had only a small mediation effect. However, competition amongst the eight mediators in each model could have hindered the ability of the statistical analysis to detect possible mediators (Hayes, 2013). When mediators are moderately correlated (as was the case with the eight life skills), it is possible that including one mediator in a model will reveal a significant indirect effect, whereas including numerous mediators will reveal no significant indirect effect (Hayes, 2013). This is because the unique variance explained by a mediator is reduced when controlling for other mediators. In contrast to the individual life skills, total life skills did partially mediate the relationships between coach autonomy support and all three psychological well-being

indicators. It is also possible that other mediators play a part in the relationships between coach autonomy support and participants' psychological well-being. Mediators which future studies can examine include basic need satisfaction and intrinsic motivation from self-determination theory (Ryan & Deci, 2000).

The present study had a number of limitations which need to be highlighted. To begin, with self-report data there is always a concern with social desirability and the truthfulness of responses. As all data was collected at one time-point, common method bias could also be a cause for concern. According to Podsakoff et al. (2003), the use of different response formats for the independent, mediator and dependent variables in this study should have reduced possible common method bias. Future studies could reduce possible common method bias further by obtaining the independent and dependent variables from different sources, measuring independent and dependent variables in different contexts, or by introducing a time lag between measuring the independent and dependent variables (Podsakoff et al., 2003). Another limitation was the correlational nature of this study, which means that causality could not be established between variables. Future longitudinal or experimental studies should investigate the causal relationships between the coaching climate, participants' life skills development, and psychological well-being. This is especially the case given that youth development is hypothesized to occur over longer periods of time (García-Bengoechea & Johnson, 2001).

In summary, this study found that youth sport participants were developing the following life skills through sport: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. Results provided further support for the LSSS as a scale that enables

researchers to accurately assess these eight life skills within youth sport. The findings also showed that coach autonomy support was positively related to the learning of all eight life skills. Total life skills were positively related to all three psychological well-being indicators, providing support for the pile-up effect (Benson, 2006). Overall, the findings provided some support for Benson and Saito's (2001) framework for youth development and self-determination theory's (Ryan & Deci, 2000) suggestion that an autonomy supportive climate leads to optimal development and wellness. In practice, the results suggest that coaches should create an autonomy supportive climate to promote youth sport participants' life skills development and psychological well-being.

Chapter 6 – General Discussion

The broad purpose of this PhD research was to investigate the area of positive youth development through sport. This thesis primarily focused on life skills development through sport. The three main contributions addressed during this general discussion are: (1) evidence that life skills are being developed through sport in Scotland, (2) the provision of a scale to measure life skills development through sport, and (3) evidence supporting Benson and Saito's (2001) framework for youth development within sport. The limitations of the research and the implications for future studies are also discussed.

Life Skills are Being Developed Through Sport in Scotland

This thesis provides evidence that Scottish youth sports participants are developing a range of life skills through sport. Findings from Study 1 revealed that youth sport participants were learning personal and social skills, cognitive skills, goal setting, and initiative through sport. Using the LSSS, Studies 4–6 again showed that participants were developing goal setting and social skills within sport. These three studies also highlighted that youth sport participants were developing six additional life skills: teamwork, time management, emotional skills, interpersonal communication, leadership, and problem solving and decision making. Based on Studies 4–6, one could conclude that Scottish youth sport participants learned most about teamwork, interpersonal communication, social skills, and leadership, whereas they learned less about emotional skills, goal setting, problem solving and decision making, and time management. This novel finding suggests that young people learn more about certain life skills as compared to others when participating in sport. Future research may replicate such findings across a range of youth sports, along with uncovering if certain sports teach young people more about particular life skills. Some gender differences were also evident across Studies 4 and 6. In particular,

females scored higher on goal setting and time management. It is possible that a mastery-oriented climate or a focus on personal improvement is the reason females learned more about goal setting compared to males. It is also plausible that a greater focus on schoolwork accounts for females learning more about time management. Unlike males who may focus primarily on their sporting endeavours, females may develop time management skills to help balance their school and sporting demands. Given the speculative nature of these propositions, future research is needed to investigate such claims. Unlike with gender, a comparison of results from Studies 4 and 6 did not reveal any consistent age group differences. This was surprising as one may expect older participants to score higher on each of the life skills due to their greater experience in a particular sport. Although older participants did score higher for five life skills in Study 6, Study 4 found that younger participants scored higher on two life skills. Given such mixed findings, future research should investigate possible age group differences by looking at participant's length of experience in their sport and the amount of hours they dedicate to their sport on a monthly or yearly basis.

Combined, Studies 1, 4, 5, and 6 of this thesis are the first to show that Scottish (or British) adolescents perceive they learn these life skills through sport. Such findings support both quantitative and qualitative studies which have shown that American (Gould et al., 2007, 2012), Canadian (Brunelle et al., 2007; Camiré et al., 2009; Fraser-Thomas & Côté, 2009; Holt et al., 2008; MacDonald et al., 2011) and Australian (Vella et al., 2013) youth sport participants are developing these life skills through sport. Given that these countries place a major emphasis on sport, it was encouraging to see that Scottish youth sport participants were also learning these life skills.

The importance of the life skills which Scottish youth sport participants are learning through sport is highlighted by the fact that these life skills are related to other positive outcomes including academic achievement (Britton & Tesser, 1991; Humphrey et al., 2011; Elliot et al., 1990), workplace performance (Locke & Latham, 1984; Rubin & Morreale, 1996), relationship development and social acceptance (Matson et al., 2010), and physical health (Claessens et al., 2007; Elliott & Marmarosh, 1994). Both government and academic institutions should be informed that sport is a good setting for the development of life skills. This is particularly the case given the recent 'push' for academic institutions to teach young people transferrable skills, employability skills, or life skills. Take for example, the Scottish 'Curriculum for Excellence' which proposes that the development of life skills forms an important part of young peoples' education (Scottish Government, 2008). Government and academic institutions are more likely to invest in sport if research has clearly established that young people are learning life skills through sport that allow them to thrive in both the workplace and life. Ultimately, researchers are responsible for making these organisations aware of their research so that evidence-based decisions can help shape future policies and funding initiatives.

A Scale to Measure Life Skills Development Through Sport

A major contribution of this thesis was to the measurement of life skills development through sport. Study 1 highlighted some problems relating to the validity of the YES-S (MacDonald et al., 2012). Specifically, the CFA fit indices did not support the factor structure of the personal and social skills subscale and the content validity of items within the cognitive skills, goal setting, and initiative subscales was questioned. Due to

these limitations, it was necessary to develop a new scale to measure life skills development through sport.

Studies 2–5 developed and validated the LSSS, which focuses on the following life skills: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. These studies provided evidence for the content validity, factorial validity, convergent validity, discriminant validity, internal consistency reliability and test-retest reliability of the LSSS. Combined these four studies addressed the 'test content' and 'internal structure' categories of validity evidence from *The Standards* (1999). A third category of validity evidence according to *The Standards* (1999) is 'relationship to other variables'. Addressing this category, Study 6 provided evidence that the LSSS subscales are related to variables which they ought to be related to (i.e., coach autonomy support and psychological well-being indicators). In sum, the thorough development and validation of the LSSS means that researchers who use the scale can be confident in the relationships they find, their interpretation of such relationships, and their implications for coaches and administrators.

Although this PhD research has provided evidence for the validity and reliability of the LSSS, it is important to note that its validity should be continually assessed (DeVellis, 2011). Thus, future studies should provide further evidence for the validity and reliability of the scale. In particular, the LSSS should be examined in other countries/cultures and the internal structure of the scale should be tested across gender (male and female participants) and sport type (individual and team sports). According to *The Standards* (1999), it is also necessary to provide validity evidence in relation to 'response processes' and 'consequences of testing'. Studies examining response processes should investigate what

participants recall when completing the LSSS. This could be achieved by getting respondents to verbalise their thoughts when completing the scale. One would expect respondents to recall how or when they learned particular life skills when completing the scale. For example, respondents may recall times they led the warm-up or captained their team when answering leadership items. 'Consequences of testing' emphasises the need to provide greater validity evidence for measures which inform important decisions in society. For instance, a test used to stream kids in school would need to provide substantial validity evidence as it can have a major impact on a child's education. Likewise, it is important that any measure used to study or enhance youth development through sport provides considerable evidence for its validity and reliability. Therefore, I would recommend that future studies at least provide evidence for the factor structure and internal consistency reliability of the LSSS.

Going forward, the LSSS can form a central part of future investigations of life skills development through sport. The scale could be used to assess whether participants learn more or less about certain life skills in particular sports. It could be proposed due to the nature of sports (e.g., team versus individual) that a rugby player would learn more about teamwork skills than a golfer, whereas a golfer may learn more about problem solving and decision making. Given the amount of time and money associated with youth sports; parents, coaches, and sporting organizations should be informed of the life skills young people are developing through certain sports. Such information will allow sports organisations to market themselves as venues where young people can develop their life skills and help persuade parents to get their children involved in sports.

In the future, the LSSS can be used to examine the efficacy of existing programmes designed to teach young people life skills through sport (e.g., SUPER or the First Tee). For years such programmes have forged ahead in teaching life skills without a valid and reliable measure to assess their effectiveness. Using the LSSS, these programmes can accurately measure whether participants are developing the eight life skills. Given that the SUPER programme's content includes teamwork, goal setting, emotional skills, communication, and problem solving, the LSSS seems an ideal measure to assess this programme. U.K. or European based programmes aimed at promoting positive youth development through sport (e.g., Positive Coaching Scotland or the PAPA project) could also use the LSSS to assess their effectiveness.

Future longitudinal studies could use the LSSS to assess whether young peoples' perceptions of life skills development changes during the course of their involvement with a particular sport. It is possible that participants will report greater life skills development in their 5th year playing a sport as compared to their 1st year. Ideally, such research will reveal approximately how long it takes for young people to reap the benefits of their sports participation. Researchers such as García-Bengoechea and Johnson (2001) contend that human development is better understood if investigated over an extended period of time. Therefore, future studies should track athletes' life skills development to investigate changes that occur over time, why and how these changes occur, and to assess the long-term impact of sports participation.

The LSSS could also be adapted to assess life skills development in other domains such as physical education. Quite simply, this would involve changing the stem from "This sport has taught me to…" to "Physical education has taught me to…" Similarly, the scale

could be revised to obtain coach or parent ratings of whether a young person is developing their life skills through sport (e.g., "This sport has taught my daughter to…"). Obtaining ratings from numerous sources would provide more compelling evidence that young people are developing these eight life skills through sport. It would also be possible to use the scale to assess life skills development in other extracurricular activities such as music, drama, and academic clubs. This would mean that one could compare and contrast young peoples' development across a range of activities and assess whether a combination of different activities is optimal for promoting life skills development.

Despite being a promising scale for the assessment of life skills development within sport, it is important to note that the LSSS does not assess young people's ability or possession of the eight life skills. The scale simply assesses whether young people feel they have developed the eight life skills through participating in their chosen sport. It seems likely that young people's development of life skills across a range of different activities (e.g., sport, music, drama) would account for their ability on a particular life skill. For instance, a young person may have developed their social skills through interactions they have in sport and drama, and therefore have a high social skills ability. In this regard, it is possible that a participant in Study 6 of this thesis could have scored low on developing their life skills through sport, but because they learned the life skills in other settings they still displayed a high level of psychological well-being. This limitation could be addressed by adapting the LSSS to different learning environments and refining the scale into an ability measure. This would allow researchers to assess whether the learning of life skills in various settings accounts for higher levels of ability on particular life skills, and in turn higher levels of psychological well-being.

Benson and Saito's (2001) Framework Within Youth Sport

Another contribution of this PhD research was that it tested and provided support for Benson and Saito's (2001) framework for youth development within sport. This framework suggests that youth development inputs are related to young people developing their strengths; which, in turn, are related to their well-being. Using this framework allowed for the investigation of three key aspects of positive youth development: the developmental climate (Catalano et al., 2002), life skills development (Jones et al., 2011), and participants' well-being (King et al., 2005). More importantly, it answered Benson and Saito's (2001) call for research to examine the relationships between developmental inputs, young peoples' development of strengths, and their well-being. Both Studies 1 and 6 found that coach autonomy support was positively related to participants' psychological well-being; namely, their self-esteem, positive affect, and satisfaction with life. These studies also showed that coach autonomy support was positively related to the development of the following life skills: personal and social skills, goal setting, cognitive skills, initiative, teamwork, time management, emotional skills, interpersonal communication, leadership, and problem solving and decision making. Such findings highlight the importance of the coach in facilitating positive youth development through sport. In practice, these results suggest that coaches should display autonomy supportive behaviours such as listening to athletes, giving athletes input into their training, promoting independence and initiative, and showing confidence in athletes. Further research into Benson and Saito's (2001) framework will help inform coaches and administrators of the developmental inputs necessary to promote life skills development and psychological well-being in youth sport participants.

It also seems that applying self-determination theory principles would allow researchers to better describe, explain and predict how young people develop their life skills through sport. Future studies could examine all aspects of self-determination theory that may affect life skills development. Specifically, the following causal sequence could be investigated: coach autonomy support – basic need satisfaction – self-determined motivation – life skills development. According to self-determination theory, autonomy support, the satisfaction of the needs for competence, autonomy and relatedness, along with self-determined motivation are required for optimal development and well-being to occur in people (Ryan & Deci, 2000; Standage & Vallerand, 2014).

Contrary to expectations, Studies 1 and 6 provided limited support for the idea that individual life skills mediate the relationships between coach autonomy support and participants' psychological well-being. Only personal and social skills and leadership mediated the relationship between coach autonomy support and participants' self-esteem. Personal and social skills, goal setting, time management, and interpersonal communication mediated the relationship between coach autonomy support and positive affect. Only personal and social skills and time management mediated the relationship between coach autonomy support and satisfaction with life. Based on these two studies, it would be premature to suggest that individual life skills play no part in determining young peoples' psychological well-being. However, the scarcity of relationships between specific life skills and the psychological well-being indicators in the mediation models leads us onto the idea of a pile-up effect.

Results from Study 6 found support for the notion of a pile-up effect (Benson, 2006). Specifically, total life skills were positively related to participants' self-esteem,

positive affect, and satisfaction with life. It therefore seems that a variety of life skills are necessary for there to be relationships with other outcomes such as psychological well-being. As such, coaches should encourage their players to develop a range of life skills. In practical terms, this means that coaches should provide athletes with the opportunities to develop different life skills. For instance, maybe a fun team event would promote participants' social skills and leading the warm-up would promote their leadership skills. It is also plausible that the total life skills a young person develops through sport will be positively related to other outcomes such as higher academic performance and physical health. Additionally, a young person's accumulation of life skills may be negatively related to negative outcomes such as burnout and dropout from sport. In accordance with Benson and Saito's (2001) framework, future studies should investigate the relationships between life skills development and both positive and negative outcomes.

Limitations of the Research and Future Directions

Like all research, this PhD research was not without its limitations. One limitation was that all six studies relied solely on the views and perceptions of youth sport participants. Future studies could look to corroborate the results from participants by obtaining ratings from their parents and/or coaches. A second limitation of both Study 1 and 6 was the use of a cross-sectional research design. As highlighted during the thesis, this design meant that causal relationships could not be investigated. Using either longitudinal or experimental designs, future studies should assess the cause and effect relationships between the coaching climate, participants' life skills development, and well-being. A third limitation related to Studies 1 and 6 was common method bias. This was a particular concern as all data was collected at one time point. To reduce or eliminate

common method bias, future studies should introduce a time lag between measuring the independent, mediator, and dependent variables or obtain ratings for the variables from different sources (Podsakoff et al., 2003). A fourth limitation was the number of aspects of the coaching climate that were assessed (i.e., only coach autonomy support). Future research should look to assess other aspects of the coaching climate that may impact upon life skills development. For instance, future studies could investigate coach transformational leadership and the coach-athlete relationship. Other salient variables such as peer interactions could also be examined to see whether they impact participants' life skills development. A fifth limitation of this thesis was its inability to investigate how specifically young people were learning these eight life skills through sport (e.g., directly or indirectly). Future research could use a mixed methods approach to investigate how young people are developing these life skills. Such studies could use the LSSS to identify participants who have high scores for certain life skills and an interview-based approach to investigate how participants learn these life skills through sport. Coaches of athletes who report a high level of life skills development could also be observed to provide further insight into how they facilitate life skills development. A final limitation of this PhD research is that the 4-item emotional skills subscale of the LSSS only has the ability to assess young people's development of emotional skills relating to their own emotions. This is an obvious limitation as several researchers have suggested that emotional skills include the ability to deal with others' emotions (Gignac et al., 2005; Latimer et al., 2007). As suggested within the Study 4 discussion section, future research should attempt to develop a scale to assess the development of emotional skills that relate specifically to other peoples' emotions.

Conclusion

This PhD thesis has contributed to the positive youth development through sport literature in three important ways: (1) it showed that Scottish youth sport participants were developing key life skills through sport, (2) it has provided researchers and practitioners with a scale which can accurately measure life skills development through sport, and (3) it applied Benson and Saito's (2001) framework to help explain how positive youth development occurs within youth sport. Ultimately, it is my vision that life skills development would be embedded within sports programmes, so that positive youth development becomes a central aspect of youth sport. To achieve this vision, it would be necessary to educate and train coaches on how they can enhance participants' life skills development and well-being. Such education and training could be based around the life skills included within the LSSS, incorporate Benson and Saito's (2001) framework to explain how youth development occurs, and use existing programmes (e.g., SUPER) to guide how young people are taught the life skills. By putting positive youth development at the forefront of youth sport, young people will be provided with a platform to succeed in both sport and life.

References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2010). Achievement goals, competition appraisals, and the well- and ill-being of elite youth soccer players over two competitive seasons. *Journal of Sport & Exercise Psychology, 32*, 555–579.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing.* Washington, DC: American Educational Research Association.

Anderson-Butcher, D., Iachini, A. L., & Amorose, A. J. (2008). Initial reliability and validity of the perceived social competence scale. *Research on Social Work Practice*, *18*(1), 47–54.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*, 411–423.

Annett, J., Cunningham, D., & Mathias-Jones, P. (2000). A method for measuring team skills. *Ergonomics*, *43*(8), 1076–1094.

Arbuckle, J. L. (2010). Amos (Version 19.0) [Computer Program]. Chicago, IL: SPSS.

Arrindell, W. A., Meeuwesen, L., & Huyse, F. J. (1991). The satisfaction with life scale (SWLS): Psychometric properties in a non-psychiatric medical outpatients sample. *Personality and Individual Differences, 12*(2), 117–123.

Ayres, J., & Malouff, J. M. (2007). Problem-solving training to help workers increase positive affect, job satisfaction, and life satisfaction. *European Journal of Work and Organizational Psychology, 16*(3), 279–294.

Bailey, R. (2008). Youth sport and social inclusion. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 85–96). New York, NY: Routledge.

Bailey, R., Collins, D., Ford, R., MacNamara, Á., Toms, M., & Pearce, G. (2010). *Participant Development in Sport: An Academic Review*. Retrieved from Sports Coach UK website: https://www.sportscoachuk.org/sites/default/files/Participant-Development-Lit-Review.pdf

Bailey, S. J., & Deen, M. Y. (2002). Development of a web-based evaluation system: A tool for measuring life skills in youth and family programs. *Family Relations*, *51*(2), 138–147.

Baker, D. P., & Salas, E. (1992). Principles for measuring teamwork skills. *Human Factors*, *34*(4), 469–475.

Bandura, A. (1964). The stormy decade: Fact or fiction? *Psychology in the School, 1*, 224–31.

Barber, B. L., Eccles, J. S., & Stone, M. R. (2001). Whatever happened to the jock, the brain, and the princess? Young adult pathways linked to adolescent activity involvement and social identity. *Journal of Adolescent Research, 16*(5), 429–455.

Barker, D., Rossi, A., & Pühse, U. (2010). Managing teams: Comparing organisational and sport psychological approaches to teamwork. *Scandinavian Sport Studies Forum, 1*, 115–132.

Barkman, S. J., & Machtmes, K. L. (2002a). *Achieving goals survey*. Retrieved from Human Services Research Inc. website: http://www.humanserviceresearch.com/youthlifeskillsevaluation/goal.pdf

Barkman, S. J., & Machtmes, K. L. (2002b). *Communicating Survey*. Retrieved from Human Services Research Inc. website: http://www.humanserviceresearch.com/youthlifeskillsevaluation/communicating.pdf

Barkman, S. J., Mincemoyer, C. C., & Perkins, D. F. (2005). *Leadership Survey*. Retrieved from Human Services Research Inc. website: http://www.humanserviceresearch.com/youthlifeskillsevaluation/leadership.pdf

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Bar-On, R. (1997). *The Bar-On Emotional Quotient Inventory (EQ-i): A test of emotional intelligence.* Toronto, Canada: Multi-Health Systems.

Bar-On, R., & Parker, J. (2008). *Bar-On Emotional Quotient Inventory: Youth Version (EQ i:YV): Technical manual*. Toronto, Canada: Multi-Health Systems.

Barrett, P. (2007). Structural equation modeling: Adjudging model fit. *Personality and Individual Differences, 42*, 815–824.

Bartlett, M. S. (1937). Properties of sufficiency and statistical tests. *Proceedings of the Royal Society of London. Series A, 160*(901), 268–282.

Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership.* New York, NY: Free Press.

Bastian, V. A., Burns, N. R., & Nettelbeck, T. (2005). Emotional intelligence predicts life skills, but not as well as personality and cognitive abilities. *Personality and Individual Differences, 39*(6), 1135–1145.

Benson, P. L. (1990). *The troubled journey: A portrait of 6th–12th grade youth.* Minneapolis, MN: Search Institute.

Benson, P. L. (2003). Developmental assets and asset-building community: Conceptual and empirical foundations. In R. M. Lerner & P. L. Benson (Eds.), *Developmental assets and asset-building communities: Implications for research, policy, and practice* (pp. 19–43) Norwell, MA: Kluwer Academic.

Benson, P. L. (2006). *All kids are our kids: What communities must do to raise caring and responsible children and adolescents* (2nd ed.). San Francisco, CA: Jossey-Bass.

Benson, P., Leffert, N., Scales, P., & Blyth, D. (1998). Beyond the "village" rhetoric: Creating healthy communities for children and adolescents. *Applied Developmental Science, 2*(3), 138–159.

Benson, P. L., & Pittman, K. (2001). Moving the youth development message: Turning a vague idea into a moral imperative. In P. L. Benson & K. J. Pittman (Eds.), *Trends in youth development: Visions, realities and challenges* (pp. vii–xii). Norwell, MA: Kluwer Academic.

Benson, P., & Saito, R. N. (2000). The scientific foundation of youth development. In N. Jaffe (Ed.), *Youth development: Issues, challenges, and directions* (pp. 125–148). Philadelphia, PA: Public Private Ventures.

Benson, P. L., & Saito, R. N. (2001). The scientific foundations of youth development. In P. L. Benson & K. J. Pittman (Eds.), *Trends in youth development: Visions, Realities and Challenges* (pp. 135–154). Norwell, MA: Kluwer Academic.

Benson, P. L., Scales, P. C., Hamilton, S. F., & Sesma, A., Jr. (2006). Positive youth development: Theory, research, and applications. In R. M. Lerner, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (6th ed., Vol. 1, pp. 894–941). Hoboken, NJ: John Wiley.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 103*, 411–423.

Berrett, T. (2006). *High school sport involvement among Alberta's senior executives*. Retrieved from the Alberta Schools Athletic Association website: http://www.asaa.ca/new/documents/ASAACEOMLAstudyfinalreportNov2006_000.pdf

Biddle, S. J., Markland, D., Gilbourne, D., Chatzisarantis, N. L., & Sparkes, A. (2001). Research methods in sport and exercise psychology: Quantitative and qualitative issues. *Journal of Sports Sciences, 19*, 777–809.

Bienvenu, M. J. (1969). Measurement of parent-adolescent communication. *Family Coordinator*, 117–121.

Bienvenu, M. J. (1971). An interpersonal communication inventory. *Journal of Communication*, *21*(4), 381–388.

Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education, 84*(6), 740–756.

Block, J. (1965). *The challenge of response sets: Unconfounding meaning, acquiescence, and social desirability in the MMPI.* New York, NY: Meredith Publishing.

Blum, R.W. (2003). Positive youth development: A strategy for improving adolescent health. In R. M. Lerner, F. Jacobs, & D. Wertlieb (Eds.), *Handbook of applied developmental science: Promoting positive child, adolescent, and family development through research, policies, and programs. Enhancing the life chances of youth and families: Public service systems and public policy perspectives* (Vol. 2, pp. 237–252). Thousand Oaks, CA: Sage.

Boardley, I. D., & Kavussanu, M. (2007). Development and validation of the moral disengagement in sport scale. *Journal of Sport & Exercise Psychology, 29*, 608–628.

Bond, M. J., & Feather, N. T. (1988). Some correlates of structure and purpose in the use of time. *Journal of Personality and Social Psychology*, *55*(2), 321–329.

Borden, L., Wiggs, C., & Schaller, A. (2010). *Youth program quality instrument*. Retrieved from University of Minnesota website: https://www.cyfernetsearch.org/content/program-quality

Borg, G. A. (1982). Psychophysical bases of perceived exertion. *Medicine and Science of Sports and Exercise*, *14*(5), 377–381.

Borgers, N. & Hox, J. J. (2000, 3–6 October). Reliability of Responses in Questionnaire Research with Children. Paper presented at the Fifth International Conference on Logic and Methodology, Cologne, Germany.

Boring, E. G. (1961). The beginning and growth of measurement in psychology. *Isis, 52*(2) 238–257.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin, 29*(9), 1147–1158.

Brannick, M. T., Roach, R. M., & Salas, E. (1993). Understanding team performance: A multimethod study. *Human Performance*, *6*(4), 287–308.

Bristol Online Surveys. (2013). *Online survey tool*. Retrieved from the University of Bristol website: http://survey.bris.ac.uk/

Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology*, *83*(3), 405–410.

Broh, B. A. (2002). Extracurricular programming to academic achievement: Who benefits and why? *Sociology of Education, 75*(1), 69–95.

Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York, NY: Guilford Press.

Brunelle, J., Danish, S. J., & Forneris, T. (2007). The impact of a sport-based life skill program on adolescent prosocial values. *Applied Developmental Science, 11*(1), 43–55.

Bull, S. J., Albinson, J. G., & Shambrook, C. J. (1996). *The mental game plan: Getting psyched for sport*. Eastbourne, UK: Sports Dynamics.

Burt, R. S. (1976). Interpretational confounding of unobserved variables in structural equation models. *Sociological Methods and Research, 5*(1), 3–52.

Burton, D., Naylor, S., & Holliday, B. (2001). Goal setting in sport: Investigating the goal effectiveness paradox. In R. Singer, H. Hausenblas, & C. Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 497–528). New York, NY: Wiley.

Caldarella, P., & Merrell, K. W. (1997). Common dimensions of social skills of children and adolescents: A taxonomy of positive behaviors. *School Psychology Review, 26*(2), 264–278.

Callow, N., Smith, M., Hardy, L., Arthur, C. A., & Hardy, J. (2009). Measurement of transformational leadership and its relationship with team cohesion and performance level. *Journal of Applied Sport Psychology, 21*, 395–412.

Camiré, M., Trudel, P., & Forneris, T. (2009). High school athletes' perspectives on support, communication, negotiation and life skill development. *Qualitative Research in Sport and Exercise, 1*(1), 72–88.

Camiré, M., Trudel, P., & Forneris, T. (2012). Coaching and transferring life skills: Philosophies and strategies used by model high school coaches. *The Sport Psychologist, 26*(3), 243–260.

Camiré, M., Trudel, P., & Bernard, D. (2013). A case study of a high school sport program designed to teach athletes life skills and values. *The Sport Psychologist*, *27*(2), 188–200.

Campos, J. A., Zucoloto, M. L., Bonafé, F. S., Jordani, P. C., & Maroco, J. (2011). Reliability and validity of self-reported burnout in college students: A cross randomized comparison of paper-and-pencil vs. online administration. *Computers in Human Behavior*, *27*(5), 1875–1883.

Carifio, J., & Perla, R. (2008). Resolving the 50-year debate around using and misusing Likert scales. *Medical Education, 42*(12), 1150–1152.

Carron, A. V., Hausenblas, H. A., & Eys, M. (2005). *Group Dynamics in Sport* (3rd ed.). Morgantown, WV: Fitness Information Technology.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). Group cohesion and individual adherence to physical activity. *Journal of Sport & Exercise Psychology, 10*, 119–126.

Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review*, *30*(7), 879–889.

Cashmore, E. (2008). *Sport and exercise psychology: The key concepts* (2nd ed.). London, UK: Routledge.

Catalano, R. F., Berglund, M. L., Ryan, J. A., Lonczak, H. S., & Hawkins, J. D. (1999). *Positive youth development in the United States: Research findings on evaluations of positive youth development programs*. Seattle, WA: U.S. Department of Health and Human Services.

Catalano, R. F., Berglund, M. L., Ryan, J. A., Lonczak, H. S., & Hawkins, J. D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Prevention & Treatment*, *5*(1), Article 15.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 629–637.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*(2), 233–255.

Claessens, B. J., van Eerde, W., Rutte, C. G., & Roe, R. A. (2007). A review of time management literature. *Personnel Review, 36*(2), 255–276.

Clark, L. E., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309–319.

Coakley, J. J. (2002). Using sports to control deviance and violence among youths. In M. Gatz, M. A. Messner, & S. J. Ball-Rokeach (Eds.), *Paradoxes of youth and sport* (pp. 13–30). Albany, NY: State University of New York Press.

Combs, M. L., & Slaby, D. A. (1977). Social-skills training with children. In B. B. Lahay & A. E. Kazdin (Eds.), *Advances in clinical child psychology* (pp. 161–201). New York, NY: Springer.

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.

Connell, J. P., Gambone, M. A., & Smith, T. J. (2001). *Youth development in community settings: Challenges to our field and our approach*. Toms River, NJ: Institute for Research and Reform in Education.

Connolly, J. (1989). Social self-efficacy in adolescence: Relations with self-concept, social adjustment, and mental health. *Canadian Journal of Behavioural Science Review, 21*(3), 258–269.

Conroy, D. E., & Coatsworth, J. D. (2006). Coach training as a strategy for promoting youth social development. *The Sport Psychologist, 20*, 128–144.

Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods, 6*(2), 147–168.

Côté, J., and Fraser-Thomas, J. (2007). Youth involvement in sport. In P. Crocker (Ed.), *Sport Psychology: A Canadian Perspective* (pp. 270–98). Toronto, Canada: Pearson.

Côté, J., Strachan, L., & Fraser-Thomas, J. (2008). Participation, personal development, and performance through youth sport. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 34–45). New York, NY: Routledge.

Cowan, D. T., Taylor, I. M., McEwan, H. E., & Baker, J. S. (2012). Bridging the gap between self-determination theory and coaching soccer to disadvantaged youth. *Journal of Applied Sport Psychology*, *24*(4), 361–374.

Cox, R. H. (2012). *Sport psychology: Concepts and applications* (7th ed.). New York, NY: McGraw-Hill.

Crawford, J. R., & Henry, J. D. (2004). The positive and negative affect schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *43*(3), 245–265.

Creswell, J. W. (2003). Research design: Qualitative, quantitative, and mixed approaches. Thousand Oaks, CA: Sage.

Crocker, P. R. (1997). A confirmatory factor analysis of the positive and negative affect schedule (PANAS) with a youth sport sample. *Journal of Sport & Exercise Psychology, 19*(1), 91–97.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297–334.

Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods, 1*(1), 16–29.

Danish, S. J. (2002a). *SUPER* (*Sports United to Promote Education and Recreation) program leader manual and student activity book* (3rd ed.). Richmond, VA: Virginia Commonwealth University.

Danish, S. J. (2002b). Teaching life skills through sport. In M. Gatz, M. Messmer, & S. Ball-Rokeach (Eds.), *Paradoxes of youth and sport* (pp. 49–60). Albany, NY: State University of New York Press.

Danish, S. J., Forneris, T., Hodge, K., & Heke, I. (2004). Enhancing youth development through sport. *World Leisure*, *3*, 38–49.

Danish, S. J., Forneris, T., & Wallace, I. (2005). Sport-based life skills programming in the schools. *Journal of Applied School Psychology, 21*(2), 41–62.

Danish, S. J., Petitpas, A. J., & Hale, B. D. (1992). A developmental-educational intervention model of sport psychology. *The Sport Psychologist, 6*, 403–415.

Darden, C. A., Ginter, E. J, & Gazda, G. M. (1996). Life-skills development scale-adolescent form: The theoretical and therapeutic relevance of life-skills. *Journal* of *Mental Health Counseling, 18,* 142–163.

Day, D. V. (2001). Leadership development: A review in context. *The Leadership Quarterly, 11*(4), 581–613.

Deci, E. L. (2001). *The sport climate questionnaire.* Retrieved from the Self-Determination Theory website: http://www.psych.rochester.edu/SDT/measures/auton_sport.html.

DeVellis, R. F. (2011). *Scale development: Theory and applications* (Vol. 26). London, UK: Sage.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.

DiLalla, D. L., & Dollinger, S. J. (2006). Cleaning up data running preliminary analyses. In F. T. Leong & J. T. Austin (Eds.), *The psychology research handbook: A guide for graduate students and research assistants* (2nd ed., pp. 241–253). Thousand Oaks, CA: Sage.

Diseth, Å., Danielsen, A. G., & Samdal, O. (2012). A path analysis of basic need support, self-efficacy, achievement goals, life satisfaction and academic achievement level among secondary school students. *Educational Psychology, 32*(3), 335–354.

Douvan, J. D., & Adelson, J. (1966). *The adolescent experience*. New York, NY: Wiley.

Duda, J. L. (2013). Introduction to the special issue on the PAPA project. *International Journal of Sport and Exercise Psychology, 11*(4), 307–310.

Duffett, A., & Johnson, J. (2004). *All work and no play? Listening to what kids and parents really want from out-of-school time.* New York, NY: Public Agenda.

Dunbar, N. E., Brooks, C. F., & Kubicka-Miller, T. (2006). Oral communication skills in higher education: Using a performance-based evaluation rubric to assess communication skills. *Innovative Higher Education, 31*(2), 115–128.

Dunn, E., & Arbuckle Jr., J. G. (2003). Life skills in children of incarcerated fathers. *Life Report*, 1-11.

Dupuis, M., Bloom, G. A., & Loughead, T. M. (2006). Team captains' perceptions of athlete leadership. *Journal of Sport Behavior, 29,* 60–78.

Dworkin, J., & Larson, R. (2006). Adolescents' negative experiences in organized youth activities. *Journal of Youth Development*, *1*(3), 1–19.

Dworkin, J. B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence, 32*(1), 17–26.

Dziuban, C. D., & Shirkey, E. S. (1974). When is a correlation matrix appropriate for factor analysis? Some decision rules. *Psychological Bulletin, 81*, 358–361.

D'Zurilla, T. J., & Goldfried, M. R. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology*, *78*(1), 107–126.

D'Zurilla, T. J., & Nezu, A. M. (1990). Development and preliminary evaluation of the social problem-solving inventory. *Psychological Assessment*, *2*(2), 156–163.

D'Zurilla, T. J., & Nezu, A. M. (2010). Problem-solving therapy. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (pp. 197–225). New York, NY: Guilford Publications.

Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of Social Issues*, *59*(4), 865–889.

Eccles, J., & Gootman, J. A. (2002). *Community programs to promote youth development*. Washington, DC: National Academies Press.

Eilam, B., & Aharon, I. (2003). Students planning in the process of self-regulated learning. *Contemporary Educational Psychology, 28*, 304–334.

Elliott, T., Godshall, F., Shrout, J. R., & Witty, T. (1990). Problem-solving appraisal, self-reported study habits, and performance of academically at-risk college students. *Journal of Counseling Psychology, 37*, 203–207.

Elliott, T. R., & Marmarosh, C. L. (1994). Problem-solving appraisal, health complaints, and health-related expectancies. *Journal of Counseling and Development, 72*(5), 531–537.

Engels, R. C., Deković, M., & Meeus, W. (2002). Parenting practices, social skills and peer relationships in adolescence. *Social Behavior and Personality: An International Journal*, *30*(1), 3–17.

Erikson, E. H. (1959). Identity and the life cycle. *Psychological Issues, 1*, 50–100.

Erikson, E. H. (1963). *Youth: Change and challenge*. New York, NY: Basic Books.

Erikson, E. H. (1968). *Identity, youth, and crisis.* New York, NY: Norton.

Eys, M. A., Carron, A. V., Bray, S. R., & Brawley, L. R. (2007). Item wording and internal consistency of a measure of cohesion: The group environment questionnaire. *Journal of Sport & Exercise Psychology, 29*(3), 395–402.

Eys, M. A., Loughead, T. M., Bray, S. R., & Carron, A. V. (2009). Development of a cohesion questionnaire for youth: The youth sport environment questionnaire. *Journal of Sport & Exercise Psychology, 31*, 390–408.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*, 272–299.

Fanning, E. (2005). Formatting a paper-based survey questionnaire: Best practices. *Practical Assessment Research and Evaluation, 10*(12), 1–14.

Ford, M. E. (1982). Social cognition and social competence in adolescence. *Developmental Psychology*, *18*(3), 323–340.

Forneris, T., Camiré, M., & Trudel, P. (2012). The development of life skills and values in high school sport: Is there a gap between stakeholder's expectations and perceived experiences? *International Journal of Sport and Exercise Psychology*, *10*(1), 9–23.

Fraser-Thomas, J., & Côté, J. (2009). Understanding adolescents' positive and negative developmental experiences in sport. *The Sport Psychologist, 23*, 3–23.

Fraser-Thomas, J. L., Côté, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education and Sport Pedagogy, 10*(1), 19–40.

Fraser-Thomas, J., Côté, J., & Deakin, J. (2008). Understanding dropout and prolonged engagement in adolescent competitive sport. *Psychology of Sport and Exercise*, *9*(5), 645–662.

Fraser-Thomas, J., Côté, J., & MacDonald, D. J. (2010). Community size in youth sport settings: Examining developmental assets and sport withdrawal. *Revue phénEPS/PHEnex Journal*, *2*(2), 1–9.

Fredricks, J. A., & Eccles, J. S. (2006). Is extracurricular participation associated with beneficial outcomes? Concurrent and longitudinal relations. *Developmental Psychology, 42*(2), 698–713.

Freud, A. (1969). Adolescence as a developmental disturbance. In G. Caplan & S. Lebovici (Eds.), *Adolescence* (pp. 5–10). New York, NY: Basic Books.

Flett, M. R., Gould, D., Griffes, K. R., & Lauer, L. (2013). Tough love for underserved youth: A comparison of more and less effective coaching. *The Sport Psychologist, 27*(4), 325–337.

Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7*(3), 286–299.

Furr, R. M., & Bacharach, V. R. (2013). *Psychometrics: An introduction* (2nd ed.). London, UK: Sage.

Gagné, M., Ryan, R. M., & Bargmann, K. (2003). The effects of parent and coach autonomy support on need satisfaction and well-being of gymnasts. *Journal of Applied Sport Psychology, 15*, 372–390.

Gaito, J. (1980). Measurement scales and statistics: Resurgence of an old misconception. *Psychological Bulletin, 87*(3), 564–567.

García-Bengoechea, E., & Johnson, G. M. (2001). Ecological systems theory and children's development in sport: Toward a process-person-context-time research paradigm. *Avante,* 7, 20–31.

Gestsdottir, S., & Lerner, R. M. (2008). Positive development in adolescence: The development and role of intentional self-regulation. *Human Development*, *51*(3), 202–224.

Gignac, G. E., Palmer, B. R., Manocha, R., & Stough, C. (2005). An examination of the factor structure of the Schutte self-report emotional intelligence (SSREI) scale via confirmatory factor analysis. *Personality and Individual Differences, 39*, 1029–1042.

Goleman, D. (2005). *Emotional intelligence.* New York, NY: Bantam Books.

Gonzalez, V. M., Reynolds, B., & Skewes, M. C. (2011). Role of impulsivity in the relationship between depression and alcohol problems among emerging adult college drinkers. *Experimental and Clinical Psychopharmacology, 19*(4), 303–313.

Goodwin, L. D. (2002). Changing conceptions of measurement validity: An update on the new Standards. *Journal of Nursing Education, 41*, 100–106.

Gorsuch, R. L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment, 68*(3), 532–560.

Gosling, S. D., Rentfrow, P. J., & Swann Jr., W. B. (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality, 37*(6), 504–528.

Goudas, M., Karabekou, A., & Papacharisis, V. (2007). Validity and reliability of life skills measures. *Exercise and Society, 44*, 32–38.

Gould, D. (2008). *Becoming an effective team captain: Student-athlete guide*. East Lansing, MI: Michigan State University.

Gould, D., & Carson, S. (2008). Life skills development through sport: Current status and future directions. *Sport & Exercise Psychology Review, 1*, 58–78.

Gould, D., & Carson, S. (2010). The relationship between perceived coaching behaviours and developmental benefits of high school sports participation. *Hellenic Journal of Psychology*, *7*, 298–314.

Gould, D., & Carson, S. (2011). Young athlete's perceptions of the relationship between coaching behaviors and developmental experiences. *International Journal of Coaching Science*, *5*(2), 3–29.

Gould, D., Chung, Y., Smith, P., & White, J. (2006). Future directions in coaching life skills: Understanding high school coaches' views and needs. *Athletic Insight, 8*(3), 28–38.

Gould, D., Collins, K., Lauer, L., & Chung, Y. (2007). Coaching life skills through football: A study of award winning high school coaches. *Journal of Applied Sport Psychology, 19*(1), 16–37.

Gould, D., Flett, R., & Lauer, L. (2012). The relationship between psychosocial developmental and the sports climate experienced by underserved youth. *Psychology of Sport and Exercise, 13*(1), 80–87.

Gould, D., & Voelker, D. K. (2012). Enhancing youth leadership through sport and physical education. *Journal of Physical Education, Recreation and Dance*, *83*(8), 38–41.

Granello, D. H., & Wheaton, J. E. (2004). Online data collection: Strategies for research. *Journal of Counseling & Development*, *82*(4), 387–393.

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, *83*(4), 508–517.

Guba, E., & Lincoln, Y. (1994). Competing paradigms in qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.

Gunnell, K. E., Schellenberg, B. J., Wilson, P. M., Crocker, P. R., Mack, D. E., & Zumbo, B. D. (2014a). A review of validity evidence presented in the Journal of Sport & Exercise Psychology (2002–2012): Misconceptions and recommendations for validation research. In B. D. Zumbo & E. K. Chan (Eds.), *Validity and Validation in Social, Behavioral, and Health Sciences*. *Social Indicators Research Series 54* (pp. 137–156). Switzerland: Springer.

Gunnell, K. E., Wilson, P. M., Zumbo, B. D., Crocker, P. R. Mack, D. E., Schellenberg, B. J. (2014b). Validity theory and validity evidence for scores derived from the behavioural regulation in exercise questionnaire. In B. D. Zumbo & E. K. Chan (Eds.), *Validity and Validation in Social, Behavioral, and Health Sciences*. *Social Indicators Research Series 54* (pp. 175–191). Switzerland: Springer.

Gustafsson, H., Skoog, T., Podlog, L., Lundqvist, C., & Wagnsson, S. (2013). Hope and athlete burnout: Stress and affect as mediators. *Psychology of Sport and Exercise, 14*, 640–649.

Hall, G. S. (1904). *Adolescence: Its psychology and its relations to psychology, anthropology, sociology, sex, crime, religion, and education.* New York, NY: Appleton.

Hamilton, S. F. (1999). *A three-part definition of positive youth development.* Unpublished manuscript, College of Human Ecology, Cornell University, New York.

Hanbury, C., & Malti, T. (2011). *Monitoring and evaluating life skills for youth development.* Retrieved from the Jacobs Foundation website: http://www.jacobsfoundation.org/cms/fileadmin/jacobs/monitoring/Jacobs_ME_Guideline_e.pdf

Hand, D. J. (1996). Statistics and the theory of measurement. *Journal of the Royal Statistical Society*. Series A (Statistics in Society), 445–492.

Hansen, D. M., & Larson, R. W. (2002). *The Youth Experiences Survey.* Unpublished Manuscript, University of Illinois at Urbana-Champaign, Illinois.

Hansen, D. M., & Larson, R. W. (2005). *The Youth Experience Survey 2.0: Instrument revisions and validity testing*. Unpublished manuscript, University of Illinois at Urbana-Champaign, Illinois.

Hansen, D. M., & Larson, R. W. (2007). Amplifiers of developmental and negative experiences in organized activities: Dosage, motivation, lead roles, and adult-youth ratios. *Journal of Applied Developmental Psychology, 28*, 360–374.

Hanson, D. M., Larson, R. W., & Dworkin, J. B. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. *Journal of Research on Adolescence, 13(1)*, 25–55.

Harrison, C. (1980). *Readability in the classroom.* Cambridge, UK: Cambridge University Press.

Harter, S. (1982). The perceived competence scale for children. *Child Development, 53*, 87–97.

Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. L. Baumeister, *Self-esteem: The puzzle of low self-regard* (pp. 87–116). New York, NY: Plenum Press.

Hardman, K., & Marshall, J. J. (2005). *Update on the State and Status of Physical Education Worldwide*. Keynote presentation at the 2nd World Summit on Physical Education, Magglingen, Switzerland.

Hartmann, D. (2003). Theorizing sport as social intervention: A view from the grassroots. *Quest, 55*, 118–140.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*(4), 408–420.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Haynes, S. N., Richard, D., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, 7*(3), 238–247.

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, *7*(2), 191–205.

Hellison, D. (2003) *Teaching Responsibility through Physical Activity.* Champaign, IL: Human Kinetics.

Hellison, D., Martinek, T., & Walsh. D. (2008). Sport and responsible leadership among youth. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 49–60). New York, NY: Routledge.

Hellison, D., & Walsh, D. (2002). Responsibility-based youth programs evaluation: Investigating the investigations. *Quest, 54*, 292–307.

Henry, F. M., Reed, V. A., & McAllister, L. L. (1995). Adolescents' perceptions of the relative importance of selected communication skills in their positive peer relationships. *Language, Speech, and Hearing Services in Schools*, *26*(3), 263–272.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement, 66*(3), 393–416.

Heppner, P. P., & Krieshok, T. S. (1983). An applied investigation of problem-solving appraisal, vocational identity, and career service requests, utilization, and subsequent evaluations. *The Vocational Guidance Quarterly*, *31*, 240–249.

Heppner, P. P., & Peterson, C. H. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology, 29*(1), 66–75.

Herzog, A. R., & Bachman, J. G. (1981). Effects of questionnaire length on response quality. *Public Opinion Quarterly, 45*(4), 549–559.

Hess, J. D., & Bacigalupo, A. C. (2011). Enhancing decisions and decision-making processes through the application of emotional intelligence skills. *Management Decision*, *49*(5), 710–721.

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*(5), 967–988.

Hodge, K., & Danish, S. (1999). Promoting life skills for adolescent males through sport. In A. M. Horne & M. S. Kiselica (Eds.), *Handbook of counseling boys and adolescent males*: A *practitioner's guide* (pp. 55–71). Thousand Oaks, CA: Sage.

Hodge, K., Danish, S., & Martin, J. (2013). Developing a conceptual framework for life skills interventions. *The Counseling Psychologist, 41*(8), 1125–1152.

Hoegl, M., & Gemuenden, H. G. (2001). Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. *Organization Science*, *12*(4), 435–449.

Holt, N. L. (2007). An ethnographic study of positive youth development on a high school soccer team. Paper presented at Society for Research in Child Development conference, Boston, MA.

Holt, N. L. (2008). Introduction: Positive youth development through sport. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 1–5). New York, NY: Routledge.

Holt, N. L., Black, D. E., & Tink, L. (2006). *Do athletes learn life skills through sport?* Paper presented at Association for the Advancement of Applied Sport Psychology Conference, Miami, FL.

Holt, N. L., & Jones, M. I. (2008). Future directions for positive youth development and sport research. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 97–109). New York, NY: Routledge.

Holt, N. L., Tink, L. N., Mandigo, J. L., & Fox, K. R. (2008). Do youth learn life skills through their involvement in high school sport? A case study. *Canadian Journal of Education, 31*(2), 281–304.

Holt, N. L., & Sehn, Z. L. (2008). Processes associated with positive youth development and participation in competitive youth sport. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 24–33). New York, NY: Routledge.

Holt, N. L., Sehn, Z. L., Spence, J. C., Newton, A. S., & Ball, G. D. (2012). Physical education and sport programs at an inner city school: Exploring possibilities for positive youth development. *Physical Education and Sport Pedagogy, 17*(1), 97–113.

Horn, J. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*(2), 179–185.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Humphrey, N., Kalambouka, A., Wigelsworth, M., Lendrum, A., Deighton, J., & Wolpert, M. (2011). Measures of social and emotional skills for children and young people: A systematic review. *Educational and Psychological Measurement, 71*(4), 617–637.

Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J., & Williams, L. J. (1997). Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives. *Journal of Organizational Behavior, 18*(6), 667–683.

Hutcheson, G. D., & Sofroniou, N. (1999). *The multivariate social scientist: Introductory statistics using generalized linear models*. London, UK: Sage.

IBM Corp. (2010). SPSS Statistics for Windows (Version 19.0). Armonk, NY: IBM Corp.

Inderbitzen, H. M., & Foster, S. L. (1992). The teenage inventory of social skills: Development, reliability, and validity. *Psychological Assessment*, *4*(4), 451–459.

Interpersonal Communication Skills. (2011). *Skills you need: Helping you develop life skills*. Retrieved from the Skills You Need website: http://www.skillsyouneed.co.uk/IPS/Interpersonal_Communication.html

Jackson, D. L., Gillaspy Jr., J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6–23.

Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The flow state scale. *Journal of Sport & Exercise Psychology, 18*, 17–35.

Jarvis C. B., MacKenzie S. B., & Podsakoff, P. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*, 199–216.

Jõesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise, 12*(5), 500–508.

John, O. P., & Benet-Martínez, V. (2000). Measurement: Reliability, construct validation, and scale construction. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 339–369). New York, NY: Cambridge University Press.

Johns, R. (2010). *Likert items and scales*. Retrieved from Survey Question Bank website: http://www.becomeanengagedemployee.com/wp-content/uploads/2012/06/likertfactsheet.pdf

Johnson, R. B., & Christensen, L. B. (2004). *Educational research: Quantitative, qualitative, and mixed approaches.* Boston, MA: Allyn and Bacon.

Johnston, J., Harwood, C., & Minniti, A. M. (2013). Positive youth development in swimming: Clarification and consensus of key psychosocial assets. *Journal of Applied Sport Psychology*, *25*(4), 392–411.

Jones, R. L., Armour, K. M., & Potrac, P. (2004). *Sports coaching cultures: From practice to theory*. London, UK: Routledge.

Jones, M. L., Dunn, J. G., Holt, N. L., Sullivan, P. J., & Bloom, G. A. (2011). Exploring the '5Cs' of positive youth development in sport. *Journal of Sport Behaviour, 34*(3), 250–267.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the sport emotion questionnaire. *Journal of Sport & Exercise Psychology, 27*, 407–431.

Jöreskog, K. G. (1993). Testing structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing Structural Equation Models* (pp. 294–316). Newbury Park, CA: Sage.

Jöreskog, K. G., & Sörbom, D. (2003). *LISREL 8.54: Structural equation modeling with the Simplis command language.* Lincolnwood, IL: Scientific Software International.

Jordan, P. J., & Lawrence, S. A. (2009). Emotional intelligence in teams: Development and initial validation of the short version of the workgroup emotional intelligence profile (WEIP-S). *Journal of Management and Organization*, *15*(4), 452–469.

Judge, T. A., Bono, J. E., Erez, A., & Locke, E. A. (2005). Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment. *The Journal of Applied Psychology*, *90*(2), 257–268.

Kagan, S. (1998). *Cooperative Learning*. San Clemente, CA: Kagan Cooperative Learning.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141–151.

Kelloway, K. E. (1995). Structural equation modeling in perspective. *Journal of Organizational Behavior, 16*, 215–224.

King, P. E, Schultz, W., Mueller, R. A., Dowling, E. M., Osborn, P., Dickerson, E., & Lerner, R. M. (2005). Positive youth development: Is there a nomological network of concepts used in the adolescent development literature? *Applied Developmental Psychology, 9*(4), 216–228.

Kline, P. (2000). *A psychometrics primer*. London, UK: Free Association Books.

Knapp, H., & Kirk, S. A. (2003). Using pencil and paper, internet and touch-tone phones for self-administered surveys: Does methodology matter? *Computers in Human Behavior, 19*, 117–134.

Knobel, D. P. (2010). Emotional Intelligence in Sport: A predictor of rugby performance (Unpublished master's thesis). Retrieved from The University of South Africa institutional repository: http://uir.unisa.ac.za/handle/10500/4922

Knowles, M. (1975). *Self-directed learning.* Chicago, IL: Association Press and Follett Publishing Company.

Knox, D. (2013). *Functional transferable skills inventory*. Retrieved from Life Work Transitions website: http://www.lifeworktransitions.com/exercises/functional-skills-inventory/

Kong, F., & Zhao, J. (2013). Affective mediators of the relationship between trait emotional intelligence and life satisfaction in young adults. *Personality and Individual Differences, 54*(2), 197–201.

Kudo, F. T., Longhofer, J. L., & Floersch, J. E. (2012). On the origins of early leadership: The role of authoritative parenting practices and mastery orientation. *Leadership, 8*(4), 345–375.

Lakein, A. (1973). *How to get control of your time and life*. New York, NY: Penguin.

Lane, A. M., Meyer, B. B., Devonport, T. J., Davies, K. A., Thelwell, R., Gill, G. S.,…Weston, N. (2009). Validity of the emotional intelligence scale for use in sport. *Journal of Sport Science and Medicine, 8*, 289–295.

Lang, D. (1992). Preventing short-term strain through time-management coping. *Work and Stress*, *6*(2), 169–176.

Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist, 55*(1), 170–183.

Larson, R. W., Hansen, D. M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organised youth activities. *Developmental Psychology, 42*(5), 849–863.

Latimer, A. E., Rench, T. A., & Brackett, M. A. (2007). Emotional intelligence: A framework for examining emotions in sport and exercise groups. In M. R. Beauchamp & M. A. Eys (Eds.), *Group dynamics in exercise and sport psychology: Contemporary themes* (pp. 3–24). Oxon, UK: Routledge.

Lau, P. S., & Wu, F. K. (2012). Emotional competence as a positive youth development construct: A conceptual review. *The Scientific World Journal*, 1–8.

Learning Dynamics. (2002). *Interpersonal Communication Skills Inventory.* Retrieved from Docstoc website: http://www.docstoc.com/docs/51075683/Interpersonal-Communication-Skills-Inventory

Leffert, N., Benson, P. L., Scales, P. C., Sharma, A. R., Drake, D. R. & Blyth, D. A. (1998). Developmental assets: Measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science, 2*(4), 209–230.

Lerner, R. M. (2004). *Liberty: Thriving and civic engagement among America's youth.* Thousand Oaks, CA: Sage.

Lerner, R. M. (2005). *Promoting positive youth development: Theoretical and empirical bases.* White paper prepared for the Workshop on the Science of Adolescent Health and Development, National Research Council/Institute of Medicine. Washington, DC: National Academies of Science.

Lerner, R. M. (2009). The positive youth development perspective: Theoretical and empirical bases of a strength-based approach to adolescent development. In C. R. Snyder & S. J. Lopez (Eds.), *Oxford handbook of positive psychology* (2nd ed., pp. 149–163). Oxford, UK: Oxford University Press.

Lerner, R. M., Almerghi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development: A view of the issues. *The Journal of Early Adolescence, 25(1)*, 10–16.

Lerner, R. M., Brentano, C., Dowling, E. M., & Anderson, P. M. (2002). Positive youth development: Thriving as the basis of personhood and civil society. *New Directions for Youth Development, 95*, 11–33.

Lerner, J. V., Phelps, E., Forman, Y. E., & Bowers, E. (2009). Positive youth development. In. R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed.). Hoboken, NJ: Wiley.

Lerner, R. M., Von Eye, A., Lerner, J. V., Lewin-Bizan, S., & Bowers, E. P. (2010). The meaning and measurement of thriving: A view of the issues. *Journal of Youth and Adolescence, 39*, 707–719.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 22(140)*, 5–55.

Lim, B. S., & Wang, C. K. (2009). Perceived autonomy support, behavioural regulations in physical education and physical activity intention. *Psychology of Sport and Exercise*, *10*(1), 52–60.

Locke, E. A., & Latham, G. P. (1984). *Goal setting: A motivational technique that works!* Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*(9), 705–717.

Lonsdale, C., Hodge, K., & Rose, E. A. (2006). Pixels vs. paper: Comparing online and traditional survey methods in sport psychology. *Journal of Sport & Exercise Psychology, 28*, 100–108.

Loughead, T. M., Hardy, J., & Eys, M. A. (2006). The nature of athlete leadership. *Journal of Sport Behavior, 29,* 142–158.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803–855.

Macan, T. H., Shahani, C., Dipboye, R. L., & Peek-Philips, A. (1990). College students' time management: Correlations with academic performance and stress. *Journal of Educational Psychology, 82*(4), 760–768.

MacDonald, D. J., Côté, J., Eys, M., Deakin, J. (2011). The role of enjoyment and motivational climate in relation to the personal development of team sport athletes. *The Sport Psychologist, 25*, 32–46.

MacDonald, D. J., Côté, J., Eys, M., Deakin, J. (2012). Psychometric properties of the youth experience survey with young athletes. *Psychology of Sport and Exercise, 13*, 332–340.

MacDonald, G. B., & Valdivieso, R. (2001). Measuring deficits and assets: How we track youth development now, and how we should track it. In P. L. Benson & K. J. Pittman (Eds.), *Trends in youth development: Visions, realities and challenges* (pp. 155–186). Norwell, MA: Kluwer Academic.

MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct measurement and validation procedures in MIS and behavioral research: Integrating new and existing techniques. *Management Information Systems Quarterly, 35*(2), 293–334.

Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sport Sciences, 21*, 883–904.

Mallett, C. J. (2005). Self-determination theory: A case study of evidence-based coaching. *The Sport Psychologist, 19*, 417–429.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, 356–376.

Marsh, H. W. (1990). A multidimensional, hierarchical model of self-concept: Theoretical and empirical justification. *Educational Psychology Review*, *2*(2), 77–172.

Marsh, H. W. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals? *Journal of Educational Psychology, 84*(4), 553–562.

Marsh, H. W. (1993). The effects of participation in sport during the last two years of high school. *Sociology of Sport Journal, 10*, 18–43.

Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indices in confirmatory factor analysis: Effects of sample size. *Psychological Bulletin, 103,* 391–411.

Marsh, H. W., Parker, J., & Barnes, J. (1985). Multidimensional adolescent self-esteem concepts: Their relationship to age, sex and academic measures. *American Educational Research Journal, 22*, 445–464.

Matell, M. S., & Jacoby, J. (1972). Is there an optimal number of alternatives for Likert scale items? Effects of testing time and scale properties. *Journal of Applied Psychology, 56*(6), 506–509.

Matson, J. L., Neal, D., Fodstad, J. C., Hess, J. A., Mahan, S., & Rivet, T. T. (2010). Reliability and validity of the Matson evaluation of social skills with youngsters. *Behavior Modification*, *34*(6), 539–558.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3–31). New York, NY: Basic Books.

McCall, M. W. (1998). *High flyers: Developing the next generation of leaders*. Boston, MA: Harvard Business School.

McCallister, S. G., Blinde, E. M., & Weiss, W. M. (2000). Teaching values and implementing philosophies: Dilemmas of the youth sport coach. *The Physical Educator, 57*(1), 35–45.

McCluskey, K. W., & Treffinger, D. J. (1998). Nurturing talented but troubled children and youth. *Reclaiming Children and Youth, 6*(4), 215–219.

McCroskey, J. C., & Richmond, V. P. (1990). Willingness to communicate: A cognitive view. *Journal of Social Behavior and Personality*, *5*(2), 19–37.

McHale, J. P., Vinden, P. G., Bush, L., Richer, D., Shaw, D., & Smith, B. (2005). Patterns of personal and social adjustment among sport-involved and non-involved urban middle-school children. *Sociology of Sport Journal, 22*, 119–136.

McLaughlin, M. W., Irby, M. A., & Langman, J. (1994). *Urban sanctuaries: Neighborhood organizations in the lives and futures of inner-city youth*. San Francisco, CA: Jossey-Bass.

Messick, S. (1995). Validity of psychological assessment: Validations of inferences from persons' responses and performances as scientific inquiry into score meaning. *American Psychologist, 50*, 741–774.

Micheli, L. J., Armstrong, N., Bar-Or, O., Boreham, C., Chan, K., Eston, R.,…Tanner, S. (1998). Sports and children: Consensus statement on organized sports for children. *Bulletin of the World Health Organization*, *76*(5), 445–447.

Mincemoyer, C. C., Perkins, D. F., & Munyua, C. (2001a). *Critical thinking in everyday life*. Retrieved from Youth Life Skills Evaluation project website: http://extension.psu.edu/4h/internal/youthdevelop/lifeskillevaluation/assessment

Mincemoyer, C. C., Perkins, D. F., & Munyua, C. (2001b). Making decisions in everyday life. Retrieved from Youth Life Skills Evaluation project website: http://extension.psu.edu/4h/internal/youthdevelop/lifeskillevaluation/assessment

Mitchell, M., & Jolley, J. (2001). *Research design explained* (4th ed.). Belmont, CA: Wadsworth-Thomson Learning.

Moran, A. P. (2004). *Sport and exercise psychology: A critical introduction.* East Sussex, UK: Routledge.

Morgan, B. B., Glickman, A. S., Woodward, E. A., Blaiwes, A. S., & Salas, E. (1986). *Measurement of team behaviors in a navy environment* (Technical report, Contract DAH 19-78-C-0001). Retrieved from Online Information for the Defence Community website: http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA185237

Morgan, C. T., King, R. A., Weisz, J., & Schopler, J. (2004). *Introduction to psychology.* Berkshire, UK: McGraw-Hill Education.

Mulholland, E. (2008). *What sport can do: The true sport report*. Ottawa, ON: Canadian Center for Ethics in Sport.

Mullan, E., Markland, D., & Ingledew, D. K. (1997). A graded conceptualisation of self-determination in the regulation of exercise behaviour: Development of a measure using confirmatory factor analytic procedures. *Personality and Individual Differences, 23*, 745–752.

Mumford, M. D., Zaccaro, S. J., Connelly, M. S., & Marks, M. A. (2000). Leadership skills: Conclusions and future directions. *The Leadership Quarterly*, *11*(1), 155–170.

Muris, P. (2001). A brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioral Assessment*, *23*(3), 145–149.

National Research Council and Institute of Medicine (2002). *Community Programs to Promote Youth Development.* Washington, DC: National Academy Press.

Ng, J. Y., Lonsdale, C., & Hodge, K. (2011). The Basic Needs Satisfaction in Sport Scale (BNSSS): Instrument development and initial validity evidence. *Psychology of Sport & Exercise, 12*(3), 257–264.

Northouse, P. (2010). *Leadership: Theory and practice*. London, UK: Sage.

Nunnally, J.C. (1978). *Psychometric theory* (2nd ed.). London, UK: Sage.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York, NY: McGraw-Hill.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, and Computers, 32*(3), 396–402.

Offer, D. (1969). *The psychological world of the teen-ager*. New York, NY: Basic Books.

Oser, R. L., McCallum, G. A., Salas, E., & Morgan Jr., B. B. (1989). *Toward a definition of teamwork: An analysis of critical team behaviors* (Technical Report 89-004). Retrieved from Online Information for the Defence Community website: http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA212454

Pallant, J. (2005). *SPSS survival guide*. Maidenhead, UK: Open University Press.

Papacharisis, V., Goudas, M., Danish, S. J., & Theodorakis, Y. (2005). The effectiveness of teaching a life skills program in a sport context. *Journal of Applied Sport Psychology, 17*, 247–254.

Papalia, D. E., Wendkos Olds, S., & Duskin Feldman, R. (2006). *A child's world: Infancy through adolescence* (10th ed.). New York, NY: McGraw-Hill.

Paris, C. R., Salas, E., & Cannon-Bowers, J. A. (2000). Teamwork in multi-person systems: A review and analysis. *Ergonomics*, *43*(8), 1052–1075.

Park, N. (2004). The role of subjective well-being in positive youth development. *The Annals of the American Academy of Political and Social Science, 591*(1), 25–39.

Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29*, 611–621.

Payne, S. M., Hudson, J., Akehurst, S., & Ntoumanis, N. (2013). Development and initial validation of the impression motivation in sport questionnaire–team. *Journal of Sport & Exercise Psychology, 35*, 281–298.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The sport motivation scale (SMS). *Journal of Sport & Exercise Psychology, 17*, 35–53.

Pensgaard, A. M., & Roberts, G. C. (2002). Elite athletes' experiences of the motivational climate: The coach matters. *Scandanavian Journal of Medicine and Science in Sports, 12*, 54–59.

Perkins, D. F., & Mincemoyer, C. C. (2003). *Skills for everyday living*. Retrieved from Human Service Research Inc. website: http://www.humanserviceresearch.com/youthlifeskillsevaluation/every.pdf

Peters, E., Finucane, M. L., MacGregor, D., & Slovic, P. (2000). The bearable lightness of aging: Judgment and decision processes in older adults. In P. C. Stern & L. L. Carstensen (Eds.), *The aging mind: Opportunities in cognitive research* (Appendix C, pp. 144–165). Washington, DC: National Academy Press.

Petitpas, A. J., Cornelius, A., & Van Raalte, J. (2008). Youth development through sport: It's all about relationships. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 61–70). New York, NY: Routledge.

Petitpas, A. J., Cornelius, A .E., Van Raalte, J. L., & Jones, T. (2005). A framework for planning youth sport programs that foster psychosocial development. *The Sport Psychologist*, 19, 63–80.

Petitpas, A. J., Van Raalte, J. L., Cornelius, A. E., & Presbrey, J. (2004). A life skills development program for high school student-athletes. *The Journal of Primary Prevention, 24*(3), 325–334.

Petlichkoff, L. M. (2001). Teaching life skills through golf: Development and delivery of a sports-based program. *Proceedings of the 10th World Congress of Sport Psychology, Vol. 2* (pp. 318–319). Thessaloniki, Greece: Christodoulidis.

Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences*, *29*(2), 313–320.

Phelps, E., Zimmerman, S. Warren, A. E., Jelicic, H., Von Eye, A., & Lerner, R. M. (2009). The structure and developmental course of positive youth development (PYD) in early adolescence: Implications for theory and practice. *Journal of Applied Developmental Psychology, 30*, 571–584.

Phillips, D. C., & Burbules, N. C. (2000). *Postpositivism and educational research*. New York, NY: Rowman & Littlefield.

Pittman, K., Irby, M., & Ferber, T. (2001). Unfinished business: Further reflections on a decade of promoting youth development. In P. L. Benson & K. J. Pittman (Eds.), *Trends in youth development: Visions, realities and challenges* (pp. 3–50). Norwell, MA: Kluwer Academic.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879–903.

Pons, D., Atienza, F. L., Balaguer, I., & Garcia-Merita, M. L. (2000). Satisfaction with life scale: Analysis of factorial invariance for adolescents and elderly persons. *Perceptual and Motor Skills, 91*(1), 62–68.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717–731.

Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin*, *130*(3), 435–468.

Quested, E., & Duda, J. L. (2009). Perceptions of the motivational climate, need satisfaction, and indices of well- and ill-being among hip hop dancers. *Journal of Dance Medicine & Science, 13*(1), 10–19.

Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport and Exercise, 7*, 269–286.

Reinboth, M., Duda, J. L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, *28*(3), 297–313.

Reise, S. P., Waller, N. G., & Comrey, A. L. (2000). Factor analysis and scale revision. *Psychological Assessment, 12*(3), 287–297.

Richards, J. H. (1987). Time management: A review. *Work and Stress, 1*, 73–8.

Riggio, R. E. (1986). Assessment of basic social skills. *Journal of Personality and Social Psychology*, *51*(3), 649–660.

Riggio, R. E., Throckmorton, B., & DePaola, S. (1990). Social skills and self-esteem. *Personality and Individual Differences*, *1*(8), 799–804.

Rosenberg, M. (1965). *Society and the adolescent child.* Princeton, NJ: Princeton University Press.

Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science, 7,* 94–111.

Rubin, R. B., & Martin, M. M. (1994). Development of a measure of interpersonal communication competence. *Communication Research Reports*, *11*(1), 33–44.

Rubin, R. B., & Morreale, S. P. (1996). Setting expectations for speech communication and listening. In E. A. Jones (Ed.), *Preparing competent college graduates: Setting new and higher expectations for student learning. New directions for higher education* (Vol. 96, pp. 19–29). San Francisco, CA: Jossey-Bass.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.

Salas, E., Cooke, N. J., & Rosen, M. A. (2008). On teams, teamwork, and team performance: Discoveries and developments. *Human Factors, 50*(3), 540–547.

Salas, E., Dickinson, T. L., Converse, S., & Tannenbaum, S. I. (1992). Toward an understanding of team performance and training. In R. W. Swezey & E. Salas (Eds.), *Teams: Their training and performance* (pp. 3–29). Norwood, NJ: Ablex

Salas, E., Sims, D. E., & Burke, C. S. (2005). Is there a "big five" in teamwork? *Small Group Research*, *36*(5), 555–599.

Salovey, P., Brackett, M., & Mayer, J. (2004). *Emotional intelligence: Key readings on the Mayer and Salovey model*. New York, NY: National Professional Resources Inc.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality, 9,* 185–211.

Sandford, R. A., Armour, K. M., & Duncombe, R. (2008). Physical activity and personal/ social development for disaffected youth in the UK: In search of evidence. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 97–109). New York, NY: Routledge.

Sandford, R. A., Armour, K. M., and Warmington, P. C. (2006). Re-engaging disaffected youth through physical activity programmes. *British Educational Research Journal, 3*, 251–71.

Sarle, W. S. (1997). Measurement theory: Frequently asked questions. *Disseminations of the International Statistical Applications Institute*, *1*(4), 61–66.

Scales, P. C., Benson, P. L., Leffert, N., & Blyth, D. A. (2000). Contribution of developmental assets to the prediction of thriving among adolescents. *Applied Developmental Science, 4(1)*, 27–46.

Scales, P. C., & Leffert, N. (1999). *Developmental assets: A synthesis of the scientific research on adolescent development.* Minneapolis, MN: Search Institute.

Schriesheim, C. A., Powers, K. J., Scandura, T. A., Gardiner, C. C., & Lankau, M. J. (1993). Improving construct measurement in management research: Comments and a quantitative approach for assessing the theoretical content adequacy of paper-and-pencil survey-type instruments. *Journal of Management, 19*, 385–417.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences, 25*, 167–177.

Schutz, R. W. (1994). Methodological issues and measurement problems in sport psychology. In S. Serpa, J. Alves, & V. Pataco (Eds.*), International perspectives on sport and exercise psychology* (pp. 35–57). Morgantown, WV: Fitness Information Technology.

Scottish Government. (2008). Curriculum for excellence, building the curriculum 3: A framework for learning and teaching. Retrieved from the Scottish Government website: http://www.gov.scot/Resource/Doc/226155/0061245.pdf

Search Institute (2004). *Developmental assets profile. Preliminary user manual*. Minneapolis, MN: Search Institute.

Search Institute. (2012). *Profile of Students Life: Attitudes and Behaviors*. Minneapolis, MN: Search Institute.

Seevers, B. S., Dormody, T. J., & Clason, D. L. (1995). Developing a scale to research and evaluate youth leadership life skills development. *Journal of Agricultural Education*, *36*(2), 28–34.

Segrin, C., & Taylor, M. (2007). Positive interpersonal relationships mediate the association between social skills and psychological well-being. *Personality and Individual Differences, 43*(4), 637–646.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482–497.

Sheridan, S., Hungelmann, A., & Maughan, D. P. (1999). A contextualized framework for social skills assessment, intervention and generalization. *School Psychology Review, 28,* 84–103.

Sheridan, S. M., & Walker, D. (1999). Social skills in context: Considerations for assessment, intervention, and generalization. In C. R. Reynolds & T. B. Gutkin (Eds.), *The handbook of school psychology* (3rd ed., pp. 686–708). New York, NY: Wiley and Sons.

Shin, D. C., & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, *5*(1), 475–492.

Siedentop, D. (2002). Junior sport and the evolution of sport cultures. *Journal of Teaching in Physical Education, 21*, 392–401.

Siskel, K., & Flexman, R. (1962). Study of the effectiveness of a flight simulator for training complex aircrew skills. Bell Aeronautics Company.

Smith, H. M., & Betz, N. E. (2000). Development and validation of a scale of perceived social self-efficacy. *Journal of Career Assessment*, *8*(3), 283–301.

Smith, A., Ntoumanis, N., & Duda, J. (2007). Goal striving, goal attainment, and well-being: Adapting and testing the self-concordance model in sport. *Journal of Sport & Exercise Psychology, 29*, 763–782.

Smith, R. E., & Smoll, F. L. (1990). Self-esteem and children's reactions to youth sport coaching behaviors: A field study of self-enhancement processes. *Developmental Psychology, 26*, 987–993.

Smith, R. E., & Smoll, F. L. (1996). The coach as a focus of research and intervention in youth sports. In F. L. Smoll & R. E. Smith, *Children and youth in sport: A biopsychosocial perspective* (pp. 125–141). Boston, MA: McGraw-Hill.

Smith, R. E., Smoll, F. L., Schutz, R. W., & Ptacek, J. T. (1995). Development and validation of a multidimensional measure of sport-specific psychological skills: The athletic coping skills inventory-28. *Journal of Sport & Exercise Psychology, 17,* 379–398.

Smither, K., & Zhu, X. (2011). High school students' experiences in a sport education unit: The importance of team autonomy and problem-solving opportunities. *European Physical Education Review*, *17*(2), 203–217.

Smoll, F. L., & Smith, R. E. (1989). Leadership behaviors in sport: A theoretical model and research paradigm. *Journal of Applied Social Psychology, 19*(18), 1522–1551.

Sonstroem, R. J. (1997a). Physical activity and self-esteem. In W. P. Morgan (Ed.), *Physical activity and mental health* (pp. 127–143). Washington, DC: Taylor & Francis.

Sonstroem, R. J. (1997b). The physical self-system: A mediator of exercise and self-esteem. In K. R. Fox (Ed.), *The physical self: From motivation to well-being* (pp. 3–26). Champaign, IL: Human Kinetics.

Sports Scotland. (2008). *Sports participation in Scotland 2007*. Retrieved from the Sports Scotland website: http://www.sportscotland.org.uk/resources/resources/sports_participation_in_scotland_2007/

Sproule, J., Martindale, R., Wang, J., Allison, P., Nash, C., & Gray, S. (2013). Investigating the experience of outdoor and adventurous project work in an educational setting using a self-determination framework. *European Physical Education Review*, *19*(3), 315–328.

Standage, M., & Gillison, F. (2007). Students' motivational responses toward school physical education and their relationship to general self-esteem and health-related quality of life. *Psychology of Sport and Exercise*, 8, 704–721.

Standage, M., & Vallerand, R. J. (2014). Motivation in sport and exercise groups: A self-determination theory perspective. In M. Beauchamp & M. Eys (Eds.), *Group dynamics in exercise and sport psychology* (2nd ed., pp. 259–278). New York, NY: Routledge.

Stassen Berger, K. (2005). *The developing person through the life span* (6th ed.). New York, NY: Worth Publishers.

Steinberg, L. D. (1993). Adolescence (3rd ed.). New York, NY: McGraw-Hill.

Stevens, S. S. (1946). On the theory of scales of measurement. *Science, 103*(2684), 677–680.

Stevens, S. S. (1967). Measurement. In J. R. Newman (Ed.), *The Harper encyclopaedia of science* (pp. 733–734). New York, NY: Harper and Row.

Stevens, M. J., & Campion, M. A. (1994). The knowledge, skill, and ability requirements for teamwork: Implications for human resource management. *Journal of Management*, *20*(2), 503–530.

Stieger, J. H., & Lind, J. M. (1980). *Statistically based tests for the number of common factors.* Paper presented at the annual meeting of the Psychometric Society, Iowa City, IA.

Strachan, L., Côté, J., & Deakin, J. (2009). "Specializers" versus "samplers" in youth sport: Comparing experiences and outcomes. *The Sport Psychologist*, *23*(1), 77–92.

Strachan, L., Côté, J., & Deakin, J. (2011). A new view: Exploring positive youth development in elite sport contexts. *Qualitative Research in Sport, Exercise and Health, 3*(1), 9–32.

Strom, P. S., Strom, R. D., & Moore, E. G. (1999). Peer and self-evaluation of teamwork skills. *Journal of Adolescence*, *22*(4), 539–553.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education Inc.

Taylor, I. M., & Bruner, M. W. (2012). The social environment and developmental experiences in elite youth soccer. *Psychology of Sport and Exercise, 13*, 390–396.

Tenenbaum, G., Eklund, R. C., & Kamata, A. (2012). Introduction to measurement in sport and exercise psychology. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 3–7). Champaign, IL: Human Kinetics.

Terwee, C. B., Bot, S. D., de Boer, M. R., van der Windt, D. A., Knol, D. L., Dekker, J., ... de Vet, H. C. (2007). Quality criteria were proposed for measurement properties of health status questionnaires. *Journal of Clinical Epidemiology, 60*(1), 34–42.

Theokas, C., Danish, S., Hodge, K., Heke, I., & Forneris, T. (2008). Enhancing life skills through sport for children and youth. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 71–81). New York, NY: Routledge.

Thomas, P. R., Murphy, S. T., & Hardy, L. (1999). Test of performance strategies: Development and preliminary validation of a comprehensive measure of athletes' psychological skills. *Journal of Sports Sciences, 17*(9), 697–711.

Thompson, B. (2003). Guidelines for authors reporting score reliability estimates. In B. Thompson (Ed.), *Score reliability: Contemporary thinking on reliability issues* (pp. 91–102). Thousand Oaks, CA: Sage.

Thompson, B., & Daniel, L. G. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement, 56*, 197–208.

Thornton, W. J., & Dumke, H. A. (2005). Age differences in everyday problem-solving and decision-making effectiveness: A meta-analytic review. *Psychology and Aging, 20*(1), 85–99.

Tourageau, R. (2004). Survey research and societal change. *Annual Review of Psychology, 55*, 775–801.

Trendler, G. (2009). Measurement theory, psychology and the revolution that cannot happen. *Theory and Psychology, 19*(5), 579–599.

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analyses. *Psychometrika, 38*, 1–10.

Valentine, M., Nembhard, I., & Edmondson, A. (2012). *Measuring teamwork in health care settings: A review of survey instruments.* Manuscript in progress.

Vaughn, B. K., & Daniel, S. R. (2012). Conceptualizing validity. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 33–39). Champaign, IL: Human Kinetics.

Vaughn, B. K., Lee, H. Y., & Kamata, A. (2012). Reliability. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 25–32). Champaign, IL: Human Kinetics.

Veach, T. L., & May, J. R. (2005). Teamwork: For the good of the whole. In S. Murphy (Ed.), *The sport psych handbook* (pp. 171–189). Leeds, UK: Human Kinetics.

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment* (pp. 41–71). Norwell, MA: Kluwer Academic.

Vella, S., Oades, L., & Crowe, T. (2011). The role of the coach in facilitating positive youth development: Moving from theory to practice. *Journal of Applied Sport Psychology, 23*, 33–48.

Vella, S. A., Oades, L. G., & Crowe, T. P. (2013). The relationship between coach leadership, the coach–athlete relationship, team success, and the positive developmental experiences of adolescent soccer players. *Physical Education and Sport Pedagogy*, *18*(5), 549–561.

Voelker, D. K., Gould, D., & Crawford, M. J. (2011). Understanding the experience of high school sport captains. *The Sport Psychologist*, *25*(1), 47–66.

Ward, P., Clark, T., Zabriskle, R., & Morris, T. (2014). Paper/pencil versus online data collection: An exploratory study. *Journal of Leisure Research, 46*(1), 84–105.

Watson, D., & Clark, L. A. (1997). Measurement and mismeasurement of mood: Recurrent and emergent issues. *Journal of Personality Assessment, 68*, 267–296.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 47*, 1063–1070.

Weare, K., & Gray, G. (2003). *What works in developing children's emotional and social competence and wellbeing?* (Research Report No. 456). Nottingham, England: Department for Education and Skills.

Weinberg, R. S. (1994). Goal setting and performance in sport and exercise settings: A synthesis and critique. *Medicine and Science in Sports and Exercise*, *26*, 469–477.

Weinberg, R. S., & Gould, D. (2007). *Foundations of sport and exercise psychology* (4th ed.). Leeds, UK: Human Kinetics.

Weir, J. P. (2005). Quantifying test-retest reliability using the intraclass correlation coefficient and the SEM. *The Journal of Strength and Conditioning Research, 19*(1), 231–240.

Weiss, M. R., Bolter, N. D., Bhalla, J. A., & Price, M. S. (2007). Positive youth development through sport: Comparison of participants in the first tee life skills programs with participants in other organized activities. *Journal of Sport & Exercise Psychology*, *29*, S212.

Weiss, M. R., Ebbeck, V., & Horn, T. S. (1997). Children's self-perceptions and sources of physical competence information: A cluster analysis. *Journal of Sport & Exercise Psychology, 19*, 52–70.

Weiss, M. R., McAuley, E., Ebbeck, V., & Wiese, D. M. (1990). Self-esteem and causal attributions for children's physical and social competence in sport. *Journal of Sport & Exercise Psychology*, *12*(1), 21–36.

Weiss, M. R., & Smith, A. L. (1999). Quality of youth sport friendships: Measurement development and validation. *Journal of Sport & Exercise Psychology*, *21*, 145–166.

Wiemann, J. M. (1977). Explication and test of a model of communicative competence. *Human Communication Research*, *3*(3), 195–213.

Wiersma, L. D. (2001). Conceptualization and development of the sources of enjoyment in youth sport questionnaire. *Measurement in Physical Education and Exercise Science*, *5*(3), 153–177.

Wigelsworth, M., Humphrey, N., Kalambouka, A., & Lendrum, A. (2010). A review of key issues in the measurement of children's social and emotional skills. *Educational Psychology in Practice, 26*(2), 173–186.

Williams, D. J., Strean, W. B., & García -Bengoechea, E. (2002). Understanding recreation and sport as a rehabilitative tool within juvenile justice programs. *Juvenile and Family Court Journal, 53*(2), 31–41.

Wilson, P. M., Longley, K., Muon, S., Rodgers, W. M., & Murray, T. C. (2006). Examining the contributions of perceived psychological need satisfaction to well-being in exercise. *Journal of Applied Behavioral Research, 11*, 3–4.

Winning Scotland Foundation. (2010). *Positive Coaching Scotland (PCS) Pilot*. Retrieved from the Winning Scotland Foundation website: http://www.winningscotlandfoundation.org/Resources/PDF-Documents/Positive-Coaching-Scotland-Evaluation-Report/

Wood, J. T. (2010). *Interpersonal communication: Everyday encounters* (6th ed.). Boston, MA: Wadsworth Publishing Company.

World Health Organization. (1999). *Partners in life skills education: Conclusions for a United Nations inter-agency meeting*. Retrieved from the World Health Organisation website: http://www.who.int/mental_health/media/en/30.pdf

Wright, A., & Côté, J. (2003). A retrospective analysis of leadership development through sport. *The Sport Psychologist*, *17*(3), 268–291.

Yukelson, D., Weinberg, R., & Jackson, A. (1984). A multidimensional group cohesion instrument for intercollegiate basketball teams. *Journal of Sport Psychology*, *6*, 103–117.

Zhu, W. (2012). Measurement practice in sport and exercise psychology: A historical comparative, and psychometric view. In G. Tenenbaum, R. C. Eklund, & A. Kamata (Eds.), *Measurement in sport and exercise psychology* (pp. 9–21). Champaign, IL: Human Kinetics.

Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, *29*(3), 663–676.

Appendix A

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Youth Sport Study

My Experiences

Directions: Young people have all kinds of experiences and can learn a lot from their involvement in sport. These questions are to help me understand your experiences. Using the scale below, please indicate the words that best describes your **experiences in the sport you mentioned earlier**.

Having trouble with the format of this question? View in tableless mode

	Yes, definitely	Quite a bit	A little	Not at all
I became better at giving feedback.	☐	☐	☐	☐
I became better at taking feedback.	☐	☐	☐	☐
Became better at sharing responsibility.	☐	☐	☐	☐
Learned that working together requires some compromising.	☐	☐	☐	☐
Learned to be patient with other group members.	☐	☐	☐	☐
Others in this activity counted on me.	☐	☐	☐	☐
Learned about the challenges of being a leader.	☐	☐	☐	☐
Learned about helping others.	☐	☐	☐	☐
Learned that it is not necessary to like people in order to work with them.	☐	☐	☐	☐
Made a new friend.	☐	☐	☐	☐
Got to know people in the community.	☐	☐	☐	☐
Learned I had a lot in common with people from different backgrounds.	☐	☐	☐	☐
I had good conversations with my parents / guardians because of this activity.	☐	☐	☐	☐
Learned how my emotions and attitude affect others in the group.	☐	☐	☐	☐
Improved skills for finding information.	☐	☐	☐	☐
Improved academic skills (reading, writing, maths, etc.).	☐	☐	☐	☐
Improved computer / internet skills.	☐	☐	☐	☐

Improved creative skills.	☐	☐	☐	☐
This activity increased my desire to stay in school.	☐	☐	☐	☐
Learned to find ways to reach my goals.	☐	☐	☐	☐
I set goals for myself in this activity.	☐	☐	☐	☐
Learned to consider challenges when making future plans.	☐	☐	☐	☐
Observed how others solved problems and learned from them.	☐	☐	☐	☐
Learned to push myself.	☐	☐	☐	☐
Learned to focus my attention.	☐	☐	☐	☐
I put all my energy into this activity.	☐	☐	☐	☐
Improved athletic or physical skills.	☐	☐	☐	☐

How I feel

Directions:

We are interested in how young people think and feel about themselves. There are no right or wrong answers.

It is important that you: are honest give your own views about yourself, without talking to others report how you feel **NOW** (not how you felt at another time in your life, or how you might feel tomorrow)

Use the scale below to indicate how true (like you) or how false (unlike you), each statement is as a description of you.

Overall, I have a lot to be proud of.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

Overall, I am a failure.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

Overall, I am no good.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

Most things I do, I do well.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

Nothing I do ever seems to turn out right.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

Overall, most things I do turn out well.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

I don't have much to be proud of.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

I can do things as well as most people.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

I feel that my life is not very useful.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

If I really try I can do almost anything I want to do.

- ○ False, not like me at all; it isn't like me at all
- ○ Mostly false
- ○ More false than true
- ○ More true than false
- ○ Mostly true
- ○ True, this statement describes me well; it is very much like me

My Life

Directions: We are interested in how young people feel about their lives. Below are five statements that you may agree or disagree with. Using the scale below, indicate how much you agree or disagree with each item by checking the appropriate answer.

Having trouble with the format of this question? View in tableless mode

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal.	☐	☐	☐	☐	☐	☐	☐
The conditions of my life are excellent.	☐	☐	☐	☐	☐	☐	☐
I am satisfied with life.	☐	☐	☐	☐	☐	☐	☐
So far I have gotten the important things I want in life.	☐	☐	☐	☐	☐	☐	☐
If I could live my life over, I would change almost nothing.	☐	☐	☐	☐	☐	☐	☐

My Feelings

Directions: We are interested in young people's feelings and emotions in **everyday life**. Below are a number of words that describe different feelings and emotions young people may experience. Indicate the extent to which you feel this way **in general**.

Having trouble with the format of this question? View in tableless mode

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested	○	○	○	○	○
Excited	○	○	○	○	○
Strong	○	○	○	○	○
Enthusiastic	○	○	○	○	○
Proud	○	○	○	○	○
Alert	○	○	○	○	○
Inspired	○	○	○	○	○

Determined	○	○	○	○	○
Attentive	○	○	○	○	○
Active	○	○	○	○	○

Your Coach

Directions:

Coaches have different styles in working with athletes, and we would like to know more about how your coach works with you.

This questionnaire contains items that are related to **your experience with your head coach**.

Using the scale below, indicate how much you agree or disagree with each statement by checking the appropriate answer.

I feel that my coach provides me with choices and options.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I feel understood by my coach.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I am able to be open with my coach while engaged in my sport.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach conveyed confidence in my ability to do well at my sport.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I feel that my coach accepts me.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach made sure I really understood the goals of my sport involvement and what I need to do.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach encouraged me to ask questions.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I feel a lot of trust in my coach.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach answers my questions fully and carefully.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach listens to how I would like to do things.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach handles people's emotions very well.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I feel that my coach cares about me as a person.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I don't feel very good about the way my coach talks to me.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

My coach tries to understand how I see things before suggesting a new way to do things.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

I feel able to share my feelings with my coach.

- ○ 1 strongly disagree
- ○ 2
- ○ 3
- ○ 4 neutral
- ○ 5
- ○ 6
- ○ 7 strongly agree

Thank You

Many thanks for taking the time to complete this survey.

Appendix B

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Interpersonal Communication Skills

Interpersonal Communication Skills

The purpose of this item review process is to select the best items for assessing the learning of **Interpersonal communication skills** within youth sport (11-21 years).

Our chosen definition of interpersonal communication is provided below.

There is three steps to reviewing each item:

1. Rate each item from 'poor' to 'excellent' on their ability to measure interpersonal communication skills.

2. Make any comments about the suitability of the item in the box provided (e.g., item wording, suitability for the sporting domain, relates more to another construct, etc.).

3. Indicate what component of interpersonal communication you feel the item relates to.

Interpersonal communication: the process by which people exchange information, feelings, and meaning through verbal and non-verbal messages: it is face-to-face communication. Based on this definition, we view interpersonal communication skills as incorporating the following components: **1)** Speaking, **2)** Listening, and **3)** Non-verbal communication.

	Poor	Fair	Good	Very good	Excellent	Comments?	Component
To speak clearly to others.	○	○	○	○	○		Please select
To give my opinions in meetings.	○	○	○	○	○		Please select
To use examples to make a point.	○	○	○	○	○		Please select
To express myself when speaking.	○	○	○	○	○		Please select
To get my point across when speaking.	○	○	○	○	○		Please select

To think about what I'm going to say before I speak.	○	○	○	○	○		Please select
To start a conversation.	○	○	○	○	○		Please select
To maintain a conversation.	○	○	○	○	○		Please select
To end a conversation.	○	○	○	○	○		Please select
To know when it is the right time to speak.	○	○	○	○	○		Please select
To talk to others about things they are interested in.	○	○	○	○	○		Please select
To change my tone of voice when speaking.	○	○	○	○	○		Please select
To pay attention to what someone is saying.	○	○	○	○	○		Please select
To repeat back what has been said, to make sure I understand the person speaking.	○	○	○	○	○		Please select
To pay attention to someone's tone of voice.	○	○	○	○	○		Please select

To listen to what other people are saying.	○	○	○	○	○		Please select
To listen carefully to others.	○	○	○	○	○		Please select
To let others speak without interrupting.	○	○	○	○	○		Please select

To give others their turn to speak.	○	○	○	○	○		Please select
To try to understand what someone is saying before I answer them.	○	○	○	○	○		Please select
To pay attention to people's body language.	○	○	○	○	○		Please select
To make eye contact when talking to someone.	○	○	○	○	○		Please select
To nod to confirm that I understand someone.	○	○	○	○	○		Please select
To know how others are feeling by their body language.	○	○	○	○	○		Please select
To communicate through non-verbal behaviours (e.g., facial expressions & gestures).	○	○	○	○	○		Please select
To have an open posture when communicating.	○	○	○	○	○		Please select
To read people's faces.	○	○	○	○	○		Please select
To read people's body language.	○	○	○	○	○		Please select
To read people's facial expressions.	○	○	○	○	○		Please select

To communicate effectively.	○	○	○	○	○		Please select
To be a good listener.	○	○	○	○	○		Please select
To be a good speaker.	○	○	○	○	○		Please select
To communicate well with others.	○	○	○	○	○		Please select
To be a good communicator.	○	○	○	○	○		Please select
To exchange information effectively.	○	○	○	○	○		Please select

Have you any other comments or suggestions for improving the interpersonal communication skills subscale?

Thank You

Many thanks for taking the time to complete this survey.

Appendix C

Thank you for agreeing to complete this survey.

Please make sure that you answer all of the questions.

General Questions

1. Name ……
2. Age ……
3. Male ☐ or Female ☐
4. Main Sport (one only)……
5. Team or Club name……
6. How many hours per week do you practice with this team or club? ……
7. How long have you played this sport? ……
8. Name of your head coach or manager? ……
9. How long have you played for this coach or manager? ……
10. What other competitive sports are you currently playing? ……
11. How many total hours per week do you play organised sport? ……

Life Skills Questions

Directions:

Young people have all kinds of experiences and can learn a lot from playing sport. These questions ask about the skills you may have learned through playing your chosen sport (written above in Q4).

Please answer the questions by circling the number to the right of each question. There are no right or wrong answers, so please answer as honestly as possible.

Please rate how much your sport has taught you to perform the skills listed below.

Teamwork Skills

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Be a team player.	1	2	3	4	5
Accept suggestions for improvement from others.	1	2	3	4	5
Cooperate with others.	1	2	3	4	5
Coordinate my efforts with others.	1	2	3	4	5
Help build team/ group spirit.	1	2	3	4	5
Change my behaviour for the good of the team/ group.	1	2	3	4	5

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Work well within a team/ group.	1	2	3	4	5
Suggest to team/ group members how they can improve their performance.	1	2	3	4	5
Accept criticism from others.	1	2	3	4	5
Accept differences of opinion with others.	1	2	3	4	5
Help another team/ group member perform a task.	1	2	3	4	5
Help maintain team/ group morale.	1	2	3	4	5
Change the way I perform for the benefit of the team/ group.	1	2	3	4	5
Give constructive criticism to others.	1	2	3	4	5
Suggest how the team/ group can improve.	1	2	3	4	5
Ask others how I can improve.	1	2	3	4	5
Resolve conflict with others.	1	2	3	4	5
Work with others for the good of the team/ group.	1	2	3	4	5
Make jokes to lighten the mood.	1	2	3	4	5
Adapt to a new role for the good of the team/ group.	1	2	3	4	5
Understand my role within a team/ group.	1	2	3	4	5
Resolve conflicts between teammates/ group members.	1	2	3	4	5
Avoid blaming others for mistakes.	1	2	3	4	5

Goal Setting Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Set goals so that I can stay focused on improving.	1	2	3	4	5
Set goals that can be measured.	1	2	3	4	5
Set a date for when a goal should be achieved.	1	2	3	4	5
Set challenging goals.	1	2	3	4	5
Write down my goals.	1	2	3	4	5
Check progress towards my goals.	1	2	3	4	5
Set short-term goals in order to achieve long-term goals.	1	2	3	4	5
Remain committed to my goals.	1	2	3	4	5
Set goals for practice.	1	2	3	4	5
Use goals to improve my performance.	1	2	3	4	5
Set goals which are important for me.	1	2	3	4	5
Set short-term goals (e.g., weekly/ monthly).	1	2	3	4	5
Set goals for competition.	1	2	3	4	5
Set specific goals.	1	2	3	4	5

Time Management Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Watch how I use my time.	1	2	3	4	5
Make a list of the activities I have to do each day.	1	2	3	4	5
Be aware of how I use my time.	1	2	3	4	5
Manage my time well.	1	2	3	4	5

Assess how much time I spend on various activities.	1	2	3	4	5
Plan ahead for tasks which need to be done.	1	2	3	4	5
Control how I use my time.	1	2	3	4	5
Use my time productively.	1	2	3	4	5
Assess how much time I have for certain activities during the week.	1	2	3	4	5
Set goals so that I use my time effectively.	1	2	3	4	5
Avoid becoming distracted from what I wanted to do.	1	2	3	4	5
Make a weekly to-do list.	1	2	3	4	5

Emotional Skills

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Control my emotions.	1	2	3	4	5
Help others control their emotions.	1	2	3	4	5
Use my emotions to get motivated.	1	2	3	4	5
Understand other peoples' emotions.	1	2	3	4	5
Talk about my emotions with others.	1	2	3	4	5
Know how to deal with my emotions.	1	2	3	4	5
Recognise other peoples' emotions.	1	2	3	4	5
Understand that I behave differently when emotional.	1	2	3	4	5
Help others use their emotions to get motivated.	1	2	3	4	5
Notice how I feel.	1	2	3	4	5
Calm others down when they are angry.	1	2	3	4	5
Use my emotions to perform well.	1	2	3	4	5
Understand that others behave differently when emotional.	1	2	3	4	5
Recognise my emotions.	1	2	3	4	5
Know how to deal with other peoples' emotions.	1	2	3	4	5
Notice how other people feel.	1	2	3	4	5
Understand that performing poorly can cause me to have negative emotions.	1	2	3	4	5
Help others use their emotions to perform well.	1	2	3	4	5
Know how to calm down when I get angry.	1	2	3	4	5

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Help other people use their emotions to stay focused.	1	2	3	4	5
Use my emotions to stay focused.	1	2	3	4	5
Understand that other people get emotional after performing poorly.	1	2	3	4	5
Control my emotions when something bad happens.	1	2	3	4	5
Notice what other people are feeling just by looking at them.	1	2	3	4	5
Understand that I can get angry when frustrated.	1	2	3	4	5
Help other people control their emotions when something bad happens.	1	2	3	4	5

Interpersonal Communication Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Speak clearly to others.	1	2	3	4	5
Pay attention to what someone is saying.	1	2	3	4	5
Pay attention to peoples' body language.	1	2	3	4	5
Communicate well with others.	1	2	3	4	5
Express myself when speaking.	1	2	3	4	5
Listen carefully to others.	1	2	3	4	5
Make eye contact when talking to someone.	1	2	3	4	5
Think about what I'm going to say before I speak.	1	2	3	4	5
Let others speak without interrupting.	1	2	3	4	5
Nod to confirm that I understand someone.	1	2	3	4	5
Know how to maintain a conversation.	1	2	3	4	5
Communicate through non-verbal behaviours (e.g., facial expressions & gestures).	1	2	3	4	5
Know when it is the right time to speak.	1	2	3	4	5

Social Skills

This sport has taught me how to…	Not at all	A little	Some	A lot	Very much
Make friends.	1	2	3	4	5
Behave appropriately in social situations.	1	2	3	4	5
Participate in social groups.	1	2	3	4	5
Introduce myself to others.	1	2	3	4	5
Ask for help when I need it.	1	2	3	4	5
Interact in various social settings.	1	2	3	4	5
Arrange to meet with others.	1	2	3	4	5
Get others to laugh.	1	2	3	4	5
Join in on a conversation.	1	2	3	4	5
Maintain close friendships.	1	2	3	4	5
Help others when they need it.	1	2	3	4	5
Start a conversation.	1	2	3	4	5
Conduct myself properly when I am around others.	1	2	3	4	5
Get involved in group activities.	1	2	3	4	5
Talk to friends about personal things.	1	2	3	4	5
Help others without them asking for help.	1	2	3	4	5
Stand up for myself.	1	2	3	4	5
Socialise with others.	1	2	3	4	5

Leadership Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Lead by example.	1	2	3	4	5
Know how to inspire others.	1	2	3	4	5
Get others to figure out how they can improve.	1	2	3	4	5
Treat each team/ group member as an individual.	1	2	3	4	5
Encourage others to work together.	1	2	3	4	5

Set high standards for the team/ group.	1	2	3	4	5
Praise others when they show improvement.	1	2	3	4	5
Know how to lead others.	1	2	3	4	5
Understand that different people have different needs.	1	2	3	4	5
Know how to motivate others.	1	2	3	4	5
Help others solve their performance problems.	1	2	3	4	5
Be a good role model for others.	1	2	3	4	5
Organise team/ group members to work together.	1	2	3	4	5
Encourage the team/ group to do their best.	1	2	3	4	5
Recognise other peoples' achievements.	1	2	3	4	5
Know how to positively influence a group of individuals.	1	2	3	4	5
Consider the individual opinions of each team/ group member.	1	2	3	4	5
Have a vision for the team/ group.	1	2	3	4	5
Get others to think about problems in new ways.	1	2	3	4	5
Display a good work ethic for others to follow.	1	2	3	4	5
Encourage others to put the teams/ groups interests ahead of their own.	1	2	3	4	5
Challenge others to perform to the best of their ability.	1	2	3	4	5
Compliment others for their performance.	1	2	3	4	5

Problem Solving Skills

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Think carefully about a problem.	1	2	3	4	5
Create as many possible solutions to a problem as possible.	1	2	3	4	5
Compare each possible solution in order to find the best one.	1	2	3	4	5
Carry out a solution to a problem.	1	2	3	4	5
Know how to overcome problems in day-to-day life.	1	2	3	4	5
Gather information about a problem.	1	2	3	4	5
List my options for solving a problem.	1	2	3	4	5
Talk to different people before making a decision.	1	2	3	4	5
Evaluate a solution to a problem.	1	2	3	4	5
Know how to solve problems in my life.	1	2	3	4	5
Ask other people for information about a problem.	1	2	3	4	5
Ask other people for possible solutions to a problem.	1	2	3	4	5
Know how to choose the best solution to a problem.	1	2	3	4	5
Assess why my solution to a problem did not work.	1	2	3	4	5
Know how to develop a plan for solving a problem.	1	2	3	4	5

Many thanks for taking the time to complete this survey.

Best of luck in your sporting activities.

Lorcan Cronin – School of Sport, University of Stirling.

Appendix D

UNIVERSITY OF STIRLING

Thank you for agreeing to complete this survey.

Please make sure that you answer all of the questions.

General Questions

12. Name……
13. Age ……
14. Male ☐ or Female ☐
15. Main sport (one only)……
16. Team or club name……
17. How many hours per week do you practice with this team or club? ……
18. How long have you played this sport? ……
19. Name of your head coach or manager? ……
20. How long have you played for this coach or manager? ……
21. What other competitive sports are you currently playing?

    ……
22. How many total hours per week do you play sport? ……

Life Skills Questions

Directions:

Young people have all kinds of experiences and can learn a lot from playing sport. These questions ask about the skills you may have learned through playing your chosen sport (written above in Q4).

Please answer the questions by circling the number to the right of each question. There are no right or wrong answers, so please answer as honestly as possible.

Please rate how much your sport has taught you to perform the skills listed below.

Teamwork

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Work well within a team/ group.	1	2	3	4	5
Help another team/ group member perform a task.	1	2	3	4	5
Accept suggestions for improvement from others.	1	2	3	4	5
Work with others for the good of the team/ group.	1	2	3	4	5
Help build team/ group spirit.	1	2	3	4	5
Suggest to team/ group members how they can improve their performance.	1	2	3	4	5
Change the way I perform for the benefit of the team/ group.	1	2	3	4	5

Goal Setting

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Set goals so that I can stay focused on improving.	1	2	3	4	5
Set challenging goals.	1	2	3	4	5
Check progress towards my goals.	1	2	3	4	5
Set short-term goals in order to achieve long-term goals.	1	2	3	4	5
Remain committed to my goals.	1	2	3	4	5
Set goals for practice.	1	2	3	4	5
Set specific goals.	1	2	3	4	5

Time Management

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Manage my time well.	1	2	3	4	5
Assess how much time I spend on various activities.	1	2	3	4	5
Control how I use my time.	1	2	3	4	5
Set goals so that I use my time effectively.	1	2	3	4	5

Emotional Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Notice how I feel.	1	2	3	4	5
Know how to deal with my emotions.	1	2	3	4	5
Notice how other people feel.	1	2	3	4	5
Understand that I behave differently when emotional.	1	2	3	4	5
Help other people control their emotions when something bad happens.	1	2	3	4	5
Use my emotions to stay focused.	1	2	3	4	5
Help others use their emotions to stay focused.	1	2	3	4	5
Understand other peoples' emotions.	1	2	3	4	5

Interpersonal Communication

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Speak clearly to others.	1	2	3	4	5
Pay attention to what someone is saying.	1	2	3	4	5
Pay attention to peoples' body language.	1	2	3	4	5
Communicate well with others.	1	2	3	4	5

Social Skills

This sport has taught me how to…	Not at all	A little	Some	A lot	Very much
Start a conversation.	1	2	3	4	5
Interact in various social settings.	1	2	3	4	5
Help others without them asking for help.	1	2	3	4	5
Get involved in group activities.	1	2	3	4	5
Maintain close friendships.	1	2	3	4	5

Leadership

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Know how to positively influence a group of individuals.	1	2	3	4	5
Organise team/ group members to work together.	1	2	3	4	5
Know how to motivate others.	1	2	3	4	5
Help others solve their performance problems.	1	2	3	4	5
Consider the individual opinions of each team/ group member.	1	2	3	4	5
Be a good role model for others.	1	2	3	4	5
Set high standards for the team/ group.	1	2	3	4	5
Recognise other peoples' achievements.	1	2	3	4	5

Problem Solving

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Think carefully about a problem.	1	2	3	4	5
Compare each possible solution in order to find the best one.	1	2	3	4	5
Create as many possible solutions to a problem as possible.	1	2	3	4	5
Evaluate a solution to a problem.	1	2	3	4	5

Many thanks for taking the time to complete this survey.

Best of luck in your sporting activities.

Lorcan Cronin – School of Sport, University of Stirling.

Appendix E

UNIVERSITY OF STIRLING

Thank you for agreeing to complete this survey.

Please make sure that you answer all of the questions.

General Questions

1. Name……
2. Age ……
3. Male ☐ or Female ☐
4. Main sport (one only)……
5. Team or club name……
6. How many hours per week do you practice with this team or club? ……
7. How long have you played this sport? ……
8. Name of your head coach or manager? ……
9. How long have you played for this coach or manager? ……
10. What other competitive sports are you currently playing?

    ……
11. How many total hours per week do you play sport? ……

Your Coach

Directions: Coaches have different styles of working with athletes and we would like to know more about how your coach works with you. This survey contains items that are related to your experience with your head coach.

Using the scale below, indicate how much you agree or disagree with each item by circling the appropriate answer.

	Strongly disagree			Neutral			Strongly agree
I feel that my coach provides me with choices and options.	1	2	3	4	5	6	7

I feel understood by my coach.	1	2	3	4	5	6	7
My coach conveys confidence in my ability to do well at my sport.	1	2	3	4	5	6	7
My coach encourages me to ask questions.	1	2	3	4	5	6	7
My coach listens to how I would like to do things.	1	2	3	4	5	6	7
My coach tries to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7

Life Skills Questions

Directions:

Young people have all kinds of experiences and can learn a lot from playing sport. These questions ask abou the skills you may have learned through playing your chosen sport (written above in Q4).

Please answer the questions by circling the number to the right of each question. There are no right or wro answers, so please answer as honestly as possible.

Please rate how much your sport has taught you to perform the skills listed below.

Teamwork

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Work well within a team/ group.	1	2	3	4	5
Help another team/ group member perform a task.	1	2	3	4	5
Accept suggestions for improvement from others.	1	2	3	4	5
Work with others for the good of the team/ group.	1	2	3	4	5
Help build team/ group spirit.	1	2	3	4	5
Suggest to team/ group members how they can improve their performance.	1	2	3	4	5
Change the way I perform for the benefit of the team/ group.	1	2	3	4	5

Goal Setting

This sport has taught me to…	**Not at all**	**A little**	**Some**	**A lot**	**Very much**
Set goals so that I can stay focused on improving.	1	2	3	4	5
Set challenging goals.	1	2	3	4	5
Check progress towards my goals.	1	2	3	4	5
Set short-term goals in order to achieve long-term goals.	1	2	3	4	5
Remain committed to my goals.	1	2	3	4	5
Set goals for practice.	1	2	3	4	5
Set specific goals.	1	2	3	4	5

Time Management

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Manage my time well.	1	2	3	4	5
Assess how much time I spend on various activities.	1	2	3	4	5
Control how I use my time.	1	2	3	4	5
Set goals so that I use my time effectively.	1	2	3	4	5

Emotional Skills

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Notice how I feel.	1	2	3	4	5
Know how to deal with my emotions.	1	2	3	4	5
Understand that I behave differently when emotional.	1	2	3	4	5
Use my emotions to stay focused.	1	2	3	4	5

Communication

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Speak clearly to others.	1	2	3	4	5
Pay attention to what someone is saying.	1	2	3	4	5
Pay attention to peoples' body language.	1	2	3	4	5
Communicate well with others.	1	2	3	4	5

Social Skills

This sport has taught me how to…	Not at all	A little	Some	A lot	Very much
Start a conversation.	1	2	3	4	5
Interact in various social settings.	1	2	3	4	5
Help others without them asking for help.	1	2	3	4	5
Get involved in group activities.	1	2	3	4	5
Maintain close friendships.	1	2	3	4	5

Leadership

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Know how to positively influence a group of individuals.	1	2	3	4	5
Organise team/ group members to work together.	1	2	3	4	5
Know how to motivate others.	1	2	3	4	5
Help others solve their performance problems.	1	2	3	4	5
Consider the individual opinions of each team/ group member.	1	2	3	4	5
Be a good role model for others.	1	2	3	4	5
Set high standards for the team/ group.	1	2	3	4	5
Recognise other peoples' achievements.	1	2	3	4	5

Problem Solving

This sport has taught me to…	Not at all	A little	Some	A lot	Very much
Think carefully about a problem.	1	2	3	4	5
Compare each possible solution in order to find the best one.	1	2	3	4	5
Create as many possible solutions to a problem as possible.	1	2	3	4	5
Evaluate a solution to a problem.	1	2	3	4	5

My Thoughts

Directions: We are interested in how young people think and feel about themselves. It is important that you report how you feel NOW (not how you felt at another time in your life, or how you might feel tomorrow).

Using the scale below, please indicate how true (like you) or how false (unlike you) each statement is as a description of you.

	False	Mostly false	More false than true	More true than false	Mostly true	True
Overall, I have a lot to be proud of.	1	2	3	4	5	6
Overall, I am no good.	1	2	3	4	5	6
Most things I do, I do well.	1	2	3	4	5	6
Nothing I do ever seems to turn out right.	1	2	3	4	5	6
Overall, most things I do turn out well.	1	2	3	4	5	6
I don't have much to be proud of.	1	2	3	4	5	6
I can do things as well as most people.	1	2	3	4	5	6
I feel that my life is not very useful.	1	2	3	4	5	6
If I really try I can do almost anything I want to do.	1	2	3	4	5	6
Overall, I am a failure.	1	2	3	4	5	6

My Emotions

Directions: We are interested in young peoples' feelings and emotions in everyday life. Below are a number of words that describe different feelings and emotions young people may experience.

Using the scale below, please indicate how much you feel this way in general.

In general, I feel…	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested	1	2	3	4	5
Excited	1	2	3	4	5
Strong	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Proud	1	2	3	4	5
Alert	1	2	3	4	5
Inspired	1	2	3	4	5
Determined	1	2	3	4	5
Attentive	1	2	3	4	5
Active	1	2	3	4	5

My Life

Directions: We are interested in how young people feel about their lives. Below are five statements that yo may agree or disagree with.

Using the scale below, please indicate how much you agree or disagree with each item by circling the appropriate answer.

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to ideal.	1	2	3	4	5	6	7
The conditions of my life are excellent.	1	2	3	4	5	6	7
I am satisfied with life.	1	2	3	4	5	6	7
So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7

Many thanks for taking the time to complete this survey.

Best of luck in your sporting activities.

Lorcan Cronin – School of Sport, University of Stirling.

Table 5
Expert Ratings for the Items Selected for the First Version of the Scale

Item	Mean rating	Component %
Teamwork		
Be a team player	2.3	75
Accept suggestions for improvement from others	4.8	100
Cooperate with others	5.0	100
Coordinate my efforts with others	4.8	100
Help build team/ group spirit[a]	4.8	100
Change my behaviour for the good of the team/ group	4.3	100
Work well within a team/ group	2.8	50
Suggest to team/ group members how they can improve their performance	4.8	100
Accept criticism from others	5.0	100
Accept differences of opinion with others	4.5	75
Help another team/ group member perform a task	3.8	100
Help maintain team/ group morale	4.8	100
Change the way I perform for the benefit of the team/ group	3.8	75
Give constructive criticism to others	4.8	100
Suggest how the team/ group can improve	4.8	100
Ask others how I can improve	3.8	75
Resolve conflict with others	3.8	100
Work with others for the good of the team/ group	4.3	50
Make jokes to lighten the mood	3.8	100
Adapt to a new role for the good of the team/ group	4.8	100
Understand my role within a team/ group	3.8	25
Resolve conflicts between teammates/ group members	3.8	75
Avoid blaming others for mistakes	4.0	50
Goal setting		
Set goals so that I can stay focused on improving[a]	3.3	43
Set goals that can be measured	3.9	100
Set a date for when a goal should be achieved	3.6	57
Set challenging goals	3.7	86
Write down my goals	3.7	71
Check progress towards my goals	3.7	71
Set short-term goals in order to achieve long-term goals	3.7	86
Remain committed to my goals	3.7	86
Set goals for practice	3.9	86
Use goals to improve my performance	3.3	14
Set goals which are important for me	3.3	86
Set short-term goals (e.g., weekly/ monthly)[a]	3.7	71
Set goals for competition	3.9	86
Set specific goals	3.7	100
Time management		
Watch how I use my time[a]	3.0	80
Make a list of the activities I have to do each day	3.8	100
Be aware of how I use my time	3.4	60
Manage my time well	3.0	40
Assess how much time I spend on various activities	3.4	80
Plan ahead for tasks which need to be done	3.8	100
Control how I use my time	3.6	60
Use my time productively	3.0	40
Assess how much time I have for certain activities during the week	3.2	60
Set goals so that I use my time effectively	3.8	80
Avoid becoming distracted from what I wanted to do	3.0	80

Make a weekly to-do list	3.4	100
Emotional skills		
Control my emotions	4.2	80
Help others control their emotions	4.6	80
Use my emotions to get motivated	4.6	80
Understand other peoples' emotions	4.4	100
Talk about my emotions with others[a]	4.8	40
Know how to deal with my emotions[a]	4.2	100
Recognise other peoples' emotions[a]	4.6	80
Understand that I behave differently when emotional	4.4	100
Help others use their emotions to get motivated[a]	4.0	20
Notice how I feel	4.2	100
Calm others down when they are angry	4.8	100
Use my emotions to perform well	4.6	100
Understand that others behave differently when emotional	4.8	80
Recognise my emotions	4.4	60
Know how to deal with other peoples' emotions[a]	4.4	100
Notice how other people feel	4.2	100
Understand that performing poorly can cause me to have negative emotions[a]	4.6	80
Help others use their emotions to perform well[b]	-	-
Know how to calm down when I get angry[a]	4.8	100
Help other people use their emotions to stay focused[a]	3.4	
Use my emotions to stay focused	4.6	100
Understand that other people get emotional after performing poorly[a]	4.6	60
Control my emotions when something bad happens[a]	4.8	100
Notice what other people are feeling just by looking at them[a]	4.2	60
Understand that I can get angry when frustrated	4.6	80
Help other people control their emotions when something bad happens[a]	4.6	80
Interpersonal communication		
Speak clearly to others	4.3	100
Pay attention to what someone is saying	4.8	75
Pay attention to peoples' body language	4.5	100
Communicate well with others	3.0	100
Express myself when speaking	4.0	100
Listen carefully to others	4.5	100
Make eye contact when talking to someone	4.5	100
Think about what I'm going to say before I speak	4.0	75
Let others speak without interrupting	4.3	100
Nod to confirm that I understand someone	4.3	75
Know how to maintain a conversation	4.3	75
Communicate through non-verbal behaviours (e.g., facial expressions & gestures)	4.3	100
Know when it is the right time to speak	4.5	75
Social skills		
Make friends	3.9	100
Behave appropriately in social situations	4.3	57
Participate in social groups	3.9	71
Introduce myself to others	4.6	57
Ask for help when I need it	4.1	86
Interact in various social settings	3.6	43
Arrange to meet with others	4.0	57
Get others to laugh	3.0	57
Join in on a conversation[a]	4.1	43

Maintain close friendships	3.6	100
Help others when they need it	4.1	86
Start a conversation	4.4	42
Conduct myself properly when I am around others[a]	4.3	86
Get involved in group activities	3.4	86
Talk to friends about personal things	3.4	100
Help others without them asking for help[a]	3.6	71
Stand up for myself	4.0	100
Socialise with others[a]	3.3	72
Leadership		
Lead by example	4.8	100
Know how to inspire others	4.4	100
Get others to figure out how they can improve	4.4	80
Treat each team/ group member as an individual	4.8	100
Encourage others to work together	4.0	100
Set high standards for the team/ group	4.2	60
Praise others when they show improvement	4.4	100
Know how to lead others	2.6	60
Understand that different people have different needs	4.8	100
Know how to motivate others	4.2	100
Help others solve their performance problems	4.2	80
Be a good role model for others	4.8	100
Organise team/ group members to work together	4.0	100
Encourage the team/ group to do their best	4.0	60
Recognise other peoples' achievements	4.2	100
Know how to positively influence a group of individuals	2.6	60
Consider the individual opinions of each team/ group member[a]	3.6	80
Have a vision for the team/ group	3.8	80
Get others to think about problems in new ways	4.4	100
Display a good work ethic for others to follow	4.6	100
Encourage others to put the teams/ groups interests ahead of their own[a]	4.0	100
Challenge others to perform to the best of their ability	4.0	80
Compliment others for their performance	4.2	100
Problem solving skills		
Think carefully about a problem	5.0	100
Create as many possible solutions to a problem as possible	5.0	100
Compare each possible solution in order to find the best one	5.0	100
Carry out a solution to a problem	5.0	100
Know how to overcome problems in day-to-day life[a]	5.0	100
Gather information about a problem	5.0	100
List my options for solving a problem	5.0	100
Talk to different people before making a decision	5.0	100
Evaluate a solution to a problem	5.0	100
Know how to solve problems in my life	5.0	100
Ask other people for information about a problem	5.0	100
Ask other people for possible solutions to a problem	5.0	100
Know how to choose the best solution to a problem	5.0	100
Assess why my solution to a problem did not work	5.0	100
Know how to develop a plan for solving a problem	5.0	100

Note. Component % refers to what percentage of reviewers assigned the item to its correct component. Mean rating was scored on a scale ranging from poor (1) to excellent (5).
[a]The wording of this item was slightly altered based on reviewer feedback. [b]This item was developed based on reviewer feedback.

Table 6
Re-wording of Items Following Reviewer Feedback

Original Item	Re-worded item
Teamwork	
Promote team/ group spirit	Help build team/ group spirit
Goal setting	
Set goals so that I stay focused	Set goals so that I can stay focused on improving
Set short term goals (e.g., monthly)	Set short-term goals (e.g., weekly/ monthly).
Time management	
Monitor how I use my time	Watch how I use my time
Emotional skills	
Talk about my emotions	Talk about my emotions with others
Manage my emotions	Know how to deal with my emotions
Recognize others emotions	Recognise other peoples' emotions
Get others motivated	Help others use their emotions to get motivated
Manage other peoples' emotions	Know how to deal with other peoples' emotions
Know that performing poorly can cause me to have negative emotions	Understand that performing poorly can cause me to have negative emotions
	Help others use their emotions to perform well[a]
Calm down when angry	Know how to calm down when I get angry
Get others to stay focused	Help other people use their emotions to stay focused
Understand that others get emotional after performing poorly	Understand that other people get emotional after performing poorly
Control my emotions when something negative happens	Control my emotions when something bad happens
Know what other people are feeling just by looking at them	Notice what other people feel just by looking at them
Help other people control their emotions when something negative happens	Help other people control their emotions when something bad happens
Social skills	
Join a conversation	Join in on a conversation
Know how to act when I am around others	Conduct myself properly when I am around others
Help others without them asking	Help others without them asking for help
To socialize	Socialise with others
Leadership	
Consider the opinions of each team/ group member	Consider the individual opinions of each team/ group member
Persuade others to put the teams/ groups interests ahead of their own	Encourage others to put the teams/ groups interests ahead of their own
Problem solving and decision making	
Overcome problems in day to day life	Know how to overcome problems in day-to-day life

Note. To aid in the re-wording of items, the views of my PhD supervisor and fellow PhD students were sought.
[a]Item added based on reviewer suggestion.

Table 8

Parallel Analysis for the Teamwork Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	8.87	1.55	1.64
2	2.01	1.46	1.53
3	1.39	1.39	1.45
4	1.32	1.32	1.37
5	.92	1.28	1.31

Note. During parallel analysis 1,000 random datasets were generated.

Table 9

Pattern Matrix for the Teamwork Subscale

Item #	Factor 1	Factor 2
1	**.92**	
2		**.40**
3	**.76**	
4	**.81**	
5	**.83**	
6	**.66**	
7	**.86**	
8	**.42**	**.41**
9		**.71**
10		**.71**
11	**.48**	.34
12	**.59**	
13	**.64**	
14		**.51**
15	**.41**	**.41**
16		**.76**
17		**.41**
18	**.62**	
19	**.40**	
20	**.60**	
21	**.70**	
22		**.43**
23		**.49**

Note. Exploratory factor analysis was conducted with a rotated solution. Factor loadings > .40 are in boldface. Coefficients < .30 were suppressed.

Table 11

Parallel Analysis for the Goal Setting Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	7.60	1.37	1.45
2	1.13	1.28	1.34
3	.99	1.22	1.26
4	.66	1.16	1.20
5	.50	1.10	1.15

Note. During parallel analysis 1,000 random datasets were generated.

Table 13

Parallel Analysis for the Time Management Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	7.05	1.32	1.41
2	.94	1.23	1.30
3	.72	1.17	1.22
4	.62	1.12	1.16
5	.49	1.06	1.10

Note. During parallel analysis 1,000 random datasets were generated.

Table 15

Parallel Analysis for the Emotional Skills Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	12.47	1.58	1.67
2	1.50	1.49	1.56
3	1.07	1.42	1.48
4	.97	1.37	1.41
5	.91	1.31	1.35

Note. During parallel analysis 1,000 random datasets were generated.

Table 17

Parallel Analysis for the Interpersonal Communication Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	7.44	1.34	1.42
2	1.01	1.25	1.32
3	.73	1.19	1.24
4	.60	1.14	1.18
5	.55	1.08	1.13

Note. During parallel analysis 1,000 random datasets were generated.

Table 19

Parallel Analysis for the Social Skills Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	8.95	1.44	1.51
2	1.33	1.35	1.40
3	.96	1.29	1.33
4	.77	1.23	1.27
5	.76	1.18	1.22

Note. During parallel analysis 1,000 random datasets were generated.

Table 21

Parallel Analysis for the Leadership Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	12.75	1.52	1.61
2	1.02	1.44	1.50
3	.86	1.37	1.42
4	.78	1.31	1.36
5	.72	1.26	1.30

Note. During parallel analysis 1,000 random datasets were generated.

Table 23

Parallel Analysis for the Problem Solving and Decision Making Subscale

Factor	Eigenvalue from real dataset	Average eigenvalue from parallel analysis	95th percentile eigenvalue from parallel analysis
1	8.99	1.38	1.47
2	1.03	1.30	1.35
3	.76	1.23	1.28
4	.73	1.17	1.22
5	.55	1.12	1.17

Note. During parallel analysis 1,000 random datasets were generated.

Table 24
Comparison Table for Teamwork Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
General	1	Be a team player	.68	Yes	4.02	1.09	-1.16	0.73
ASC	**2**	**Accept suggestions for improvement from others**	**.44**	**Yes**	**4.12**	**0.86**	**-0.76**	**0.07**
Cooperation	3	Cooperate with others	.68	Yes	4.29	0.85	-1.22	1.47
Coordination	4	Coordinate my efforts with others	.72	No	4.07	0.95	-0.91	0.44
Team spirit	**5**	**Help build team/ group spirit**	**.73**	**Yes**	**4.08**	**1.05**	**-1.03**	**0.35**
Adaptability	6	Change my behaviour for the good of the team/ group	.68	No	4.02	1.06	-1.06	0.60
General	**7**	**Work well within a team/ group**	**.75**	**Yes**	**4.10**	**0.98**	**-1.06**	**0.61**
PSC	**8**	**Suggest to team/ group members how they can improve**	**.69**	**Yes**	**3.66**	**1.09**	**-0.54**	**-0.39**
ASC	9	Accept criticism from others	.35	Yes	3.88	0.97	-0.70	0.16
Cooperation	10	Accept differences of opinion with others	.52	Yes	3.88	0.90	-0.60	-0.09
Cooperation	**11**	**Help another team/ group member perform a task**	**.70**	**No**	**3.84**	**1.07**	**-0.71**	**-0.24**
Team spirit	12	Help maintain team/ group morale	.66	No	3.96	1.02	-0.89	0.20
Adaptability	**13**	**Change the way I perform for the benefit of the team/ group**	**.73**	**No**	**4.01**	**1.01**	**-1.00**	**0.54**
PSC	14	Give constructive criticism to others	.54	Yes	3.54	1.07	-0.51	-0.28
PSC	15	Suggest how team or group members can improve	.68	Yes	3.59	1.07	-0.57	-0.24
ASC	16	Ask others how I can improve	.40	Yes	3.66	1.09	-0.49	-0.57
Cooperation	17	Resolve conflicts with others	.54	Yes	3.45	1.12	-0.49	-0.43
Coordination	**18**	**Work with others for the good of the team/ group**	**.74**	**No**	**4.04**	**0.94**	**-0.88**	**0.52**
Team spirit	19	Make jokes to lighten the mood	.45	No	4.05	1.03	-0.95	0.24
Adaptability	20	Adapt to a new role for the good of the team/ group	.69	No	3.76	1.09	-0.69	-0.11

Coordination	21	Understand my role within the team/ group	.67	No	4.09	0.99	-1.17	1.18
Cooperation	22	Resolve conflicts between teammates/ group members	.58	Yes	3.50	1.15	-0.48	-0.51
Team spirit	23	Avoid blaming others for mistakes	.35	Yes	3.69	1.11	-0.45	-0.65

Note. Items selected are in boldface. ASC = Accepting suggestions or criticism; PSC = Providing suggestions or criticism; FL = Factor Loading; CL = Cross loading.

Table 25

Comparison Table for Goal Setting Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
General	**1**	**Set goals so that I can stay focused on improving**	**.68**	**No**	**4.13**	**0.93**	**-1.00**	**0.81**
SM	2	Set goals that can be measured	.69	No	3.90	0.96	-0.71	0.18
Timely	3	Set a date for when a goal should be achieved	.63	Yes	3.47	1.22	-0.43	-0.67
MD	**4**	**Set challenging goals**	**.77**	**No**	**4.04**	**0.97**	**-0.93**	**0.54**
WM	5	Write down my goals	.63	Yes	2.86	1.43	0.04	-1.32
WM	**6**	**Check progress towards my goals**	**.75**	**Yes**	**3.37**	**1.16**	**-0.34**	**-0.72**
SL	**7**	**Set short-term goals in order to achieve long-term goals**	**.77**	**No**	**3.62**	**1.15**	**-0.49**	**-0.65**
Internalised	**8**	**Remain committed to my goals**	**.81**	**No**	**3.87**	**1.04**	**-0.65**	**-0.28**
PC	**9**	**Set goals for practice**	**.82**	**No**	**3.78**	**1.09**	**-0.72**	**-0.11**
General	10	Use goals to improve my performance	.81	Yes	4.02	0.99	-0.83	0.04
Internalised	11	Set goals which are important for me	.76	Yes	3.97	1.01	-0.84	0.15
SL	12	Set short-term goals (e.g., weekly/ monthly)	.73	No	3.47	1.20	-0.38	-0.80
PC	13	Set goals for competition	.68	No	3.95	1.13	-0.83	-0.18
SM	**14**	**Set specific goals**	**.76**	**No**	**3.88**	**1.12**	**-0.71**	**-0.36**

Note. Items selected are in boldface. SM = Specific and measureable; MD = Moderately difficult goals; WM = Write and monitor; SL = Short and long-term; PC = Practice and competition; FL = Factor Loading; CL = Cross loading.

Table 26

Comparison Table for Time Management Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
Monitor	1	Watch how I use my time	.73	No	3.67	1.12	-0.61	-0.33
Plan	2	Make a list of the activities I have to do each day	.71	No	2.78	1.36	0.11	-1.20
Assess	3	Be aware of how I use my time	.81	No	3.58	1.16	-0.53	-0.42
General	**4**	**Manage my time well**	**.84**	**No**	**3.64**	**1.15**	**-0.57**	**-0.37**
Assess	**5**	**Assess how much time I spend on various activities**	**.82**	**No**	**3.45**	**1.23**	**-0.39**	**-0.78**
Plan	6	Plan ahead for tasks which need to be done	.77	No	3.53	1.17	-0.56	-0.49
Monitor	**7**	**Control how I use my time**	**.85**	**No**	**3.47**	**1.17**	**-0.43**	**-0.61**
General	8	Use my time productively	.78	No	3.66	1.12	-0.48	-0.57
Assess	9	Assess how much time I have for certain activities during the week	.76	No	3.47	1.14	-0.43	-0.56
Plan	**10**	**Set goals so that I use my time effectively**	**.82**	**No**	**3.38**	**1.24**	**-0.32**	**-0.86**
Monitor	11	Avoid becoming distracted from what I wanted to do	.64	No	3.45	1.16	-0.42	-0.65
Plan	12	Make a weekly to-do list	.62	No	2.47	1.41	0.46	-1.11

Note. Items selected are in boldface. FL = Factor Loading; CL = Cross loading.

Table 27

Comparison Table for Emotional Skills Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
ME	1	Control my emotions	.68	Yes	3.60	1.18	-0.51	-0.62
MO	2	Help others control their emotions	.70	Yes	3.34	1.23	-0.44	-0.74
UE	3	Use my emotions to get motivated	.66	No	4.02	1.02	-0.89	0.17
UnO	**4**	**Understand other peoples' emotions**	**.71**	**No**	**3.63**	**1.09**	**-0.47**	**-0.47**
PE	5	Talk about my emotions with others	.57	Yes	2.96	1.35	-0.02	-1.15
ME	**6**	**Know how to deal with my emotions**	**.67**	**No**	**3.58**	**1.14**	**-0.52**	**-0.47**
PO	7	Recognise other peoples' emotions	.72	Yes	3.65	1.06	-0.52	-0.30
UnE	**8**	**Understand that I behave differently when emotional**	**.66**	**Yes**	**3.89**	**1.05**	**-0.89**	**0.31**
UO	9	Help others use their emotions to get motivated	.74	No	3.54	1.20	-0.48	-0.72
PE	**10**	**Notice how I feel**	**.71**	**No**	**3.70**	**1.14**	**-0.61**	**-0.40**
MO	11	Calm others down when they are angry	.73	No	3.62	1.21	-0.65	-0.54
UE	12	Use my emotions to perform well	.67	No	3.94	1.02	-0.77	-0.01
UnO	13	Understand that others behave differently when emotional	.66	No	3.86	1.05	-0.70	-0.05
PE	14	Recognise my emotions	.74	No	3.78	1.05	-0.66	-0.03
MO	15	Know how to deal with other peoples' emotions	.73	Yes	3.49	1.08	-0.28	-0.65
PO	**16**	**Notice how other people feel**	**.75**	**No**	**3.65**	**1.03**	**-0.47**	**-0.27**
UnE	17	Understand that performing poorly can cause me to have negative emotions	.58	Yes	4.10	1.04	-1.01	0.35
UO	18	Help others use their emotions to perform well	.77	No	3.61	1.06	-0.51	-0.35
ME	19	Know how to calm down when I get angry	.61	Yes	3.61	1.20	-0.53	-0.62
UO	**20**	**Help others use their emotions to stay focused**	**.81**	**No**	**3.33**	**1.17**	**-0.25**	**-0.74**
UE	**21**	**Use my emotions to stay focused**	**.76**	**No**	**3.72**	**1.07**	**-0.61**	**-0.29**

UnO	22	Understand that other people get emotional after performing poorly	.64	No	4.00	1.02	-0.93	0.39
ME	23	Control my emotions when something bad happens	.64	Yes	3.60	1.10	-0.57	-0.18
PO	24	Notice what other people are feeling just by looking at them	.71	No	3.61	1.13	-0.42	-0.71
UnE	25	Understand that I can get angry when frustrated	.53	Yes	4.01	1.05	-1.02	0.50
MO	**26**	**Help other people control their emotions when something bad happens**	**.80**	**No**	**3.53**	**1.11**	**-0.40**	**-0.56**

Note. Items selected are in boldface. ME = Managing my emotions; MO = Managing others emotions; UE = Use my emotions; UnO = Understanding others emotions; PE = Perceiving my emotions; PO = Perceiving others emotions; UnE = Understand my emotions; UO = Use others emotions; FL = Factor Loading; CL = Cross loading.

Table 28

Comparison Table for Interpersonal Communication Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
Speak	**1**	**Speak clearly to others**	**.78**	**Yes**	**4.03**	**1.03**	**-1.04**	**0.60**
Listen	**2**	**Pay attention to what someone is saying**	**.80**	**Yes**	**4.12**	**0.98**	**-1.17**	**1.18**
Non-Verbal	**3**	**Pay attention to peoples' body language**	**.75**	**No**	**3.97**	**1.01**	**-0.92**	**0.45**
General	**4**	**Communicate well with others**	**.80**	**Yes**	**4.14**	**0.92**	**-1.18**	**1.55**
Speak	5	Express myself when speaking	.80	No	3.96	0.97	-0.78	0.23
Listen	6	Listen carefully to others	.77	No	4.13	0.94	-1.08	0.94
Non-verbal	7	Make eye contact when talking to someone	.78	No	4.07	0.97	-1.06	0.89
Speak	8	Think about what I'm going to say before I speak	.71	Yes	3.79	1.09	-0.75	0.01
Listen	9	Let others speak without interrupting	.77	Yes	3.83	1.06	-0.70	-0.11
Non-verbal	10	Nod to confirm that I understand someone	.68	Yes	4.02	0.99	-0.86	0.16
Speak	11	Know how to maintain a conversation	.77	No	4.00	0.99	-0.91	0.50
Non-verbal	12	Communicate through non-verbal behaviours (e.g., facial expressions & gestures)	.68	No	3.94	1.03	-0.85	0.21
Listen	13	Know when it is the right time to speak	.78	No	3.97	1.06	-0.90	0.22

Note. Items selected are in boldface. FL = Factor Loading; CL = Cross loading.

Table 29

Comparison Table for Social Skills Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
FI	1	Make friends	.73	Yes	4.29	0.95	-1.31	1.18
PPS	2	Behave appropriately in social situations	.64	Yes	4.04	0.99	-1.07	0.97
PSG	3	Participate in social groups	.77	No	4.11	1.00	-1.10	0.82
SA	4	Introduce myself to others	.68	Yes	4.09	1.00	-1.05	0.58
H	5	Ask for help when I need it	.68	Yes	3.90	1.01	-0.74	-0.01
PPS	**6**	**Interact in various social settings**	**.77**	**No**	**3.93**	**0.94**	**-0.63**	**0.02**
SA	7	Arrange to meet with others	.71	No	3.78	1.15	-0.60	-0.64
PPS	8	Get others to laugh	.69	No	4.14	1.02	-1.09	0.52
SA	9	Join in on a conversation	.77	No	4.21	0.93	-1.13	0.83
FI	**10**	**Maintain close friendships**	**.72**	**No**	**4.10**	**1.00**	**-1.13**	**0.91**
H	11	Help others when they need it	.66	No	4.11	0.86	-0.80	0.35
SA	**12**	**Start a conversation**	**.77**	**No**	**3.94**	**1.10**	**-0.91**	**0.07**
PPS	13	Conduct myself properly when I am around others	.67	No	3.98	0.99	-0.94	0.60
PSG	**14**	**Get involved in group activities**	**.78**	**No**	**4.11**	**0.97**	**-0.97**	**0.42**
FI	15	Talk to friends about personal things	.61	Yes	3.46	1.32	-0.45	-0.87
H	**16**	**Help others without them asking for help**	**.67**	**No**	**3.85**	**1.05**	**-0.85**	**0.28**
SA	17	Stand up for myself	.59	No	4.21	0.94	-1.12	0.81
PSG	18	Socialise with others	.76	No	4.24	0.92	-1.21	1.19

Note. Items selected are in boldface. FI = Friendship and intimacy; PPS = Performance in public situations; PSG = Participation in social groups; SA = Social assertiveness; H = Helping behaviour; FL = Factor Loading; CL = Cross loading.

Table 30

Comparison Table for Leadership Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
ARM	1	Lead by example	.72	No	3.83	1.08	-0.69	-0.25
IM	2	Know how to inspire others	.76	No	3.78	1.06	-0.65	-0.07
IS	3	Get others to figure out how they can improve	.76	No	3.76	1.00	-0.59	-0.04
IC	4	Treat each team/ group member as an individual	.71	Yes	4.09	0.93	-0.96	0.66
FAGG	5	Encourage others to work together	.73	No	4.03	0.97	-0.92	0.56
HPE	**6**	**Set high standards for the team/ group**	**.78**	**No**	**4.00**	**1.02**	**-0.89**	**0.22**
CR	7	Praise others when they show improvement	.70	Yes	4.13	0.91	-0.99	0.75
General	8	Know how to lead others	.76	No	3.85	1.04	-0.63	-0.20
IC	9	Understand that different people have different needs	.69	No	3.99	0.94	-0.82	0.57
IM	**10**	**Know how to motivate others**	**.77**	**No**	**3.94**	**0.93**	**-0.70**	**0.20**
IS	**11**	**Help others solve their performance problems**	**.77**	**No**	**3.79**	**1.00**	**-0.57**	**-0.12**
ARM	**12**	**Be a good role model for others**	**.76**	**No**	**3.90**	**1.04**	**-0.74**	**-0.11**
FAGG	**13**	**Organise team/ group members to work together**	**.77**	**No**	**3.85**	**1.07**	**-0.76**	**-0.05**
HPE	14	Encourage the team/ group to do their best	.78	No	4.06	0.96	-1.00	0.78
CR	**15**	**Recognise other peoples' achievements**	**.73**	**No**	**4.09**	**0.93**	**-0.98**	**0.75**
General	**16**	**Know how to positively influence a group of individuals**	**.81**	**No**	**3.95**	**0.94**	**-0.77**	**0.37**
IC	**17**	**Consider the individual opinions of each team/ group member**	**.76**	**No**	**3.86**	**1.00**	**-0.71**	**0.10**
IM	18	Have a vision for the team/ group	.74	Yes	3.78	1.08	-0.66	-0.27
IS	19	Get others to think about problems in new ways	.73	Yes	3.63	1.09	-0.44	-0.47
ARM	20	Display a good work ethic for others to follow	.74	No	3.82	1.06	-0.62	-0.33
FAGG	21	Encourage others to put the teams/ groups interests ahead of their own	.72	No	3.76	1.07	-0.59	-0.21

HPE	22	Challenge others to perform to the best of their ability	.75	No	4.03	0.93	-0.60	-0.50
CR	23	Compliment others for their performance	.67	No	4.22	0.93	-1.13	0.69

Note. Items selected are in boldface. ARM = Appropriate role model; IM = Inspirational Motivation; IS = Intellectual Stimulation; IC = Individual consideration; FAGG = Fostering acceptance of group goals; HPE = High performance expectations; CR = Contingent reward; FL = Factor Loading; CL = Cross loading.

Table 31

Comparison Table for Problem Solving and Decision Making Items

Component	Item #	Item	FL	CL	Mean	*SD*	Skewness	Kurtosis
PDF	**1**	**Think carefully about a problem**	**.77**	**No**	**3.74**	**1.12**	**-0.68**	**-0.31**
GAS	**2**	**Create as many possible solutions to a problem as possible**	**.82**	**Yes**	**3.68**	**1.09**	**-0.59**	**-0.22**
DM	**3**	**Compare each possible solution in order to find the best one**	**.82**	**Yes**	**3.67**	**1.07**	**-0.59**	**-0.13**
SIV	4	Carry out a solution to a problem	.75	Yes	3.77	1.05	-0.67	-0.10
PDF	5	Gather information about a problem	.82	No	3.56	1.09	-0.47	-0.34
GAS	6	List my options for solving a problem	.75	No	3.31	1.28	-0.32	-0.96
DM	7	Talk to different people before making a decision	.71	No	3.69	1.05	-0.54	-0.26
SIV	**8**	**Evaluate a solution to a problem**	**.79**	**No**	**3.60**	**1.01**	**-0.56**	**0.00**
General	9	Know how to solve problems in my life	.77	No	3.60	1.09	-0.63	-0.16
PDF	10	Ask other people for information about a problem	.78	Yes	3.66	1.05	-0.50	-0.28
GAS	11	Ask other people for possible solutions to a problem	.74	Yes	3.70	1.05	-0.46	-0.41
DM	12	Know how to choose the best solution to a problem	.79	No	3.66	0.99	-0.36	-0.49
SIV	13	Assess why my solution to a problem did not work	.78	No	3.58	1.08	-0.42	-0.46
GAS	14	Know how to develop a plan for solving a problem	.79	No	3.60	1.10	-0.52	-0.45

Note. Items selected are in boldface. PDF = Problem definition and formulation; GAS = Generation of alternative solutions; DM = Decision making; SIV = Solution implementation and verification; FL = Factor Loading; CL = Cross loading.

Table 33
Factor Loadings for Each Subscale of the Life Skills Scale for Sport

Subscale	Factor Loading
Teamwork	
2. Accept suggestions for improvement from others	.22
5. Help build team/ group spirit	.70
7. Work well within a team/ group	.77
8. Suggest to team/group members how they can improve their performance	.54
11. Help another team/ group member perform a task	.47
13. Change the way I perform for the benefit of the team/ group	.65
18. Work with others for the good of the team/ group	.75
Goal setting	
1. Set goals so that I can stay focused on improving	.73
4. Set challenging goals	.81
6. Check progress towards my goals	.78
7. Set short-term goals in order to achieve long-term goals	.83
8. Remain committed to my goals	.80
9. Set goals for practice	.82
14. Set specific goals	.80
Time management	
4. Manage my time well	.82
5. Assess how much time I spend on various activities	.83
7. Control how I use my time	.86
10. Set goals so that I use my time effectively	.73
Emotional skills[a]	
6. Know how to deal with my emotions	.75
8. Understand that I behave differently when emotional	.75
10. Notice how I feel	.79
21. Use my emotions to stay focused	.65
Interpersonal communication	
1. Speak clearly to others	.84
2. Pay attention to what someone is saying	.72
3. Pay attention to peoples' body language	.76
4. Communicate well with others	.66
Social skills	
6. Interact in various social settings	.72
10. Maintain close friendships	.71
12. Start a conversation	.88
14. Get involved in group activities	.77
16. Help others without them asking for help	.71
Leadership	
6. Set high standards for the team/ group	.72
10. Know how to motivate others	.79
11. Help others solve their performance problems	.71
12. Be a good role model for others	.73
13. Organise team/ group members to work together	.75
15. Recognise other peoples' achievements	.59

16. Know how to positively influence a group of individuals	.73
17. Consider the individual opinions of each team/ group member	.65
Problem solving and decision making	
1. Think carefully about a problem	.83
2. Create as many possible solutions to a problem as possible	.87
3. Compare each possible solution in order to find the best one	.86
8. Evaluate a solution to a problem	.64

Note. $N = 223$. All factor loadings are standardized. The number before each item refers to the original item number.
[a]Revised four-item emotional skills subscale.

Table 37

Summary of Intercorrelations, Scale Ranges, Means, Standard Deviations and Reliability Estimates

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Autonomy support	-												
2. Teamwork	.33***	-											
3. Goal setting	.28***	.41***	-										
4. Time management	.26***	.30***	.54***	-									
5. Emotional skills	.20***	.37***	.42***	53***	-								
6. Communication	.32***	.42***	.37***	.48***	.44***	-							
7. Social skills	.32***	.50***	.38***	.39***	.44***	.60***	-						
8. Leadership	.34***	.55***	.52***	.51***	.46***	.59***	.62***	-					
9. Problem solving	.23***	.39***	.47***	.49***	.50***	.46***	.45***	.55***	-				
10. Total life skills	.39***	.68***	.73***	.71***	.70***	.72***	.74***	.84***	.73***	-			
11. Self-esteem	.29***	.18**	.21***	.21***	.14***	.28***	.25***	.33***	.10	.30***	-		
12. Positive affect	.36***	.31***	.42***	.45***	.29***	.41***	.38***	.38***	.28***	.50***	.39***	-	
13. Life satisfaction	.30***	.20***	.21***	.25***	.09	.24***	.16**	.24***	.13*	.26***	.46***	.38***	-
Scale Range	1–7	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–6	1–5	1–7
Mean	5.62	4.03	3.88	3.69	3.60	3.99	3.97	3.84	3.48	3.83	4.61	4.16	5.33
Standard deviation	1.40	0.68	0.85	0.99	1.06	0.83	0.88	0.82	1.02	.64	.90	.71	1.27
Cronbach's alpha	.94	.83	.91	.90	.88	.81	.85	.91	.91	.96	.84	.91	.88

*$p < .05$, **$p < .01$, ***$p < .001$

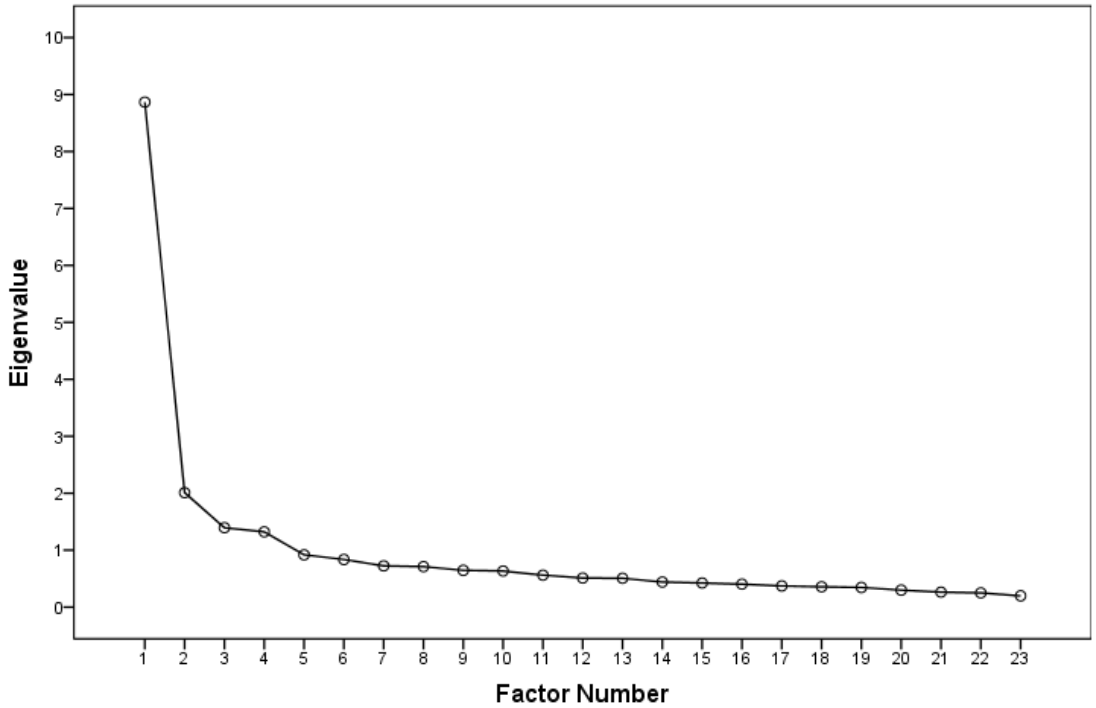

Figure 2. Scree plot for teamwork subscale. From exploratory factor analysis of unrotated factor solution.

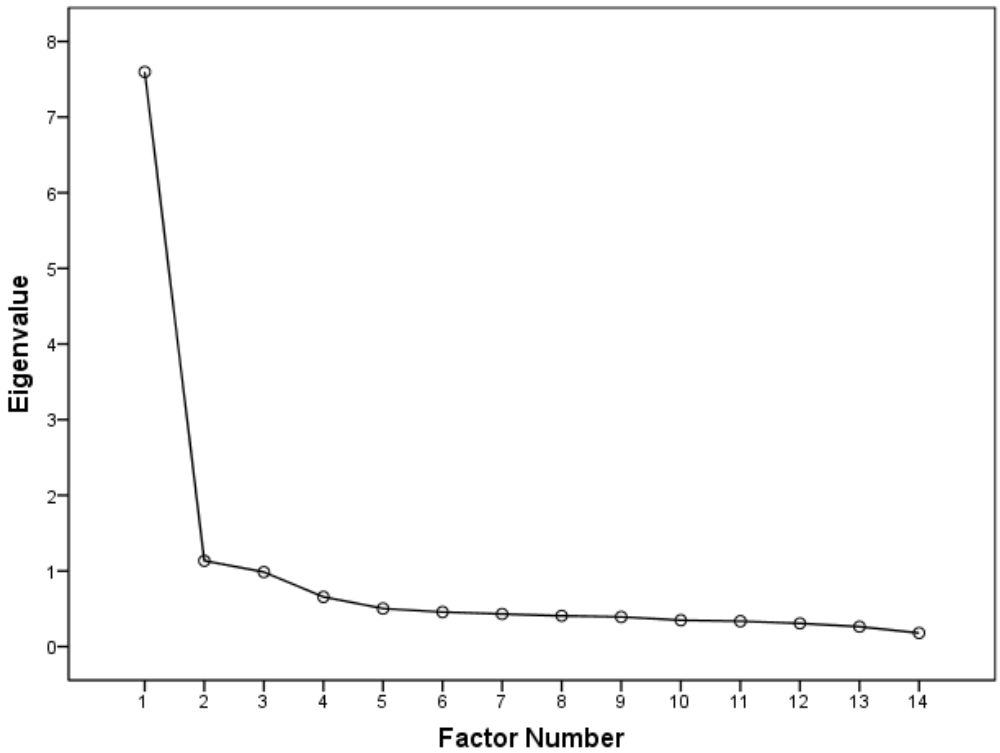

Figure 3. Scree plot for goal setting subscale. From exploratory factor analysis of unrotated factor solution.

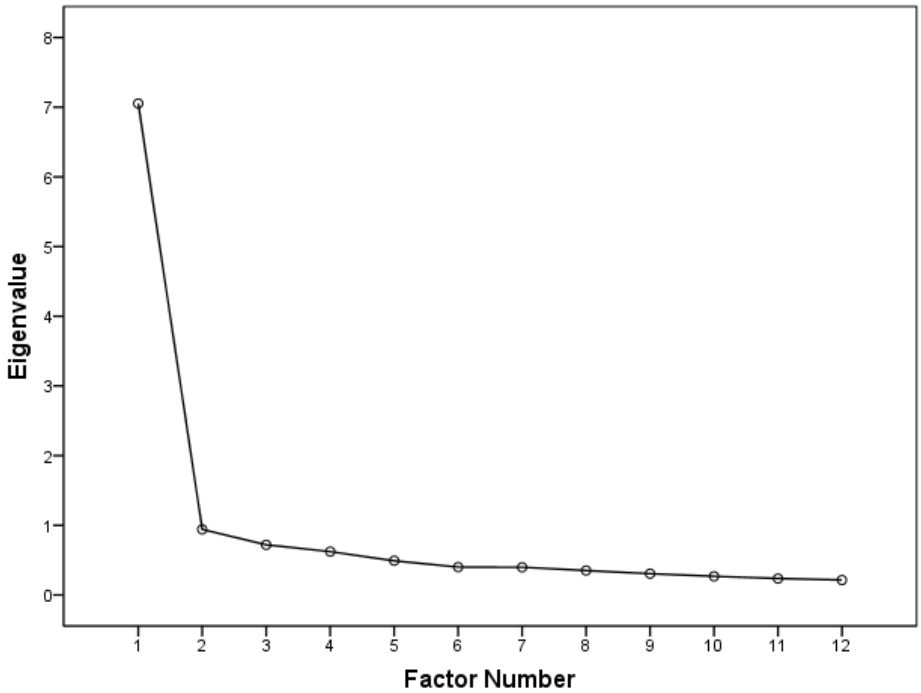

Figure 4. Scree plot for time management subscale. From exploratory factor analysis of unrotated factor solution.

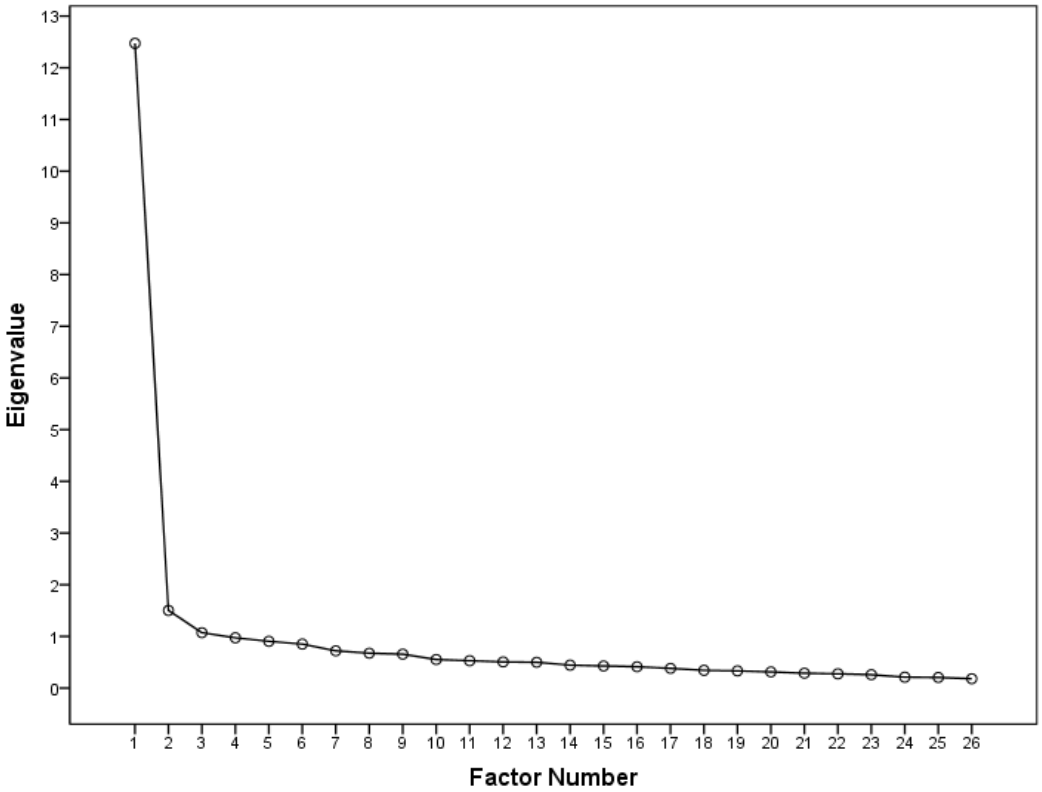

Figure 5. Scree plot for emotional skills subscale. From exploratory factor analysis of unrotated factor solution.

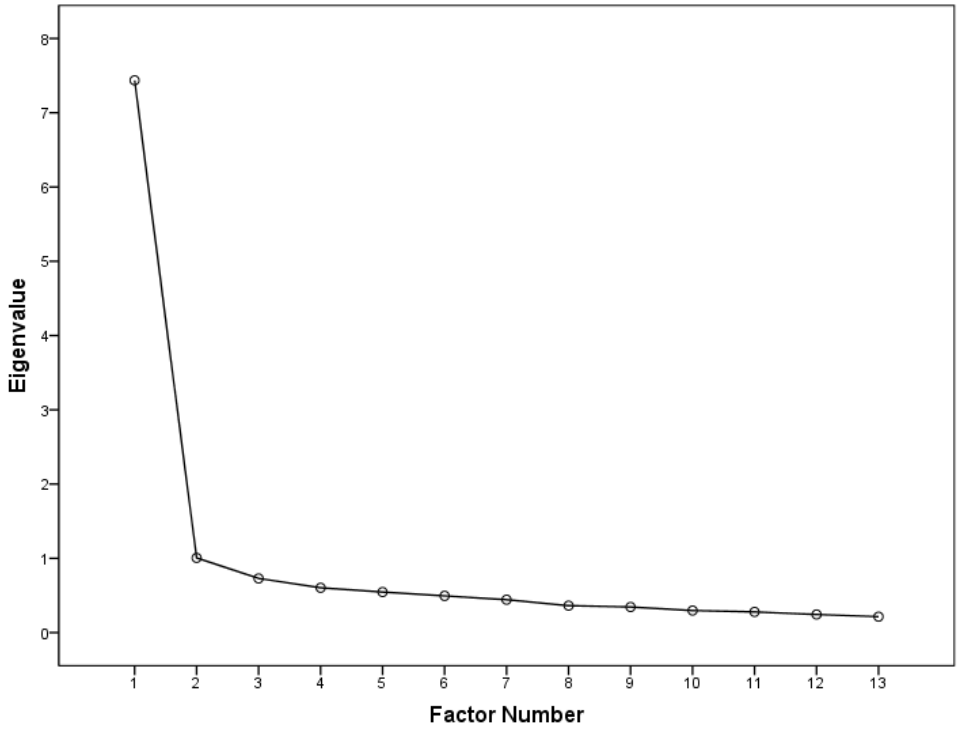

Figure 6. Scree plot for interpersonal communication subscale. From exploratory factor analysis of unrotated factor solution.

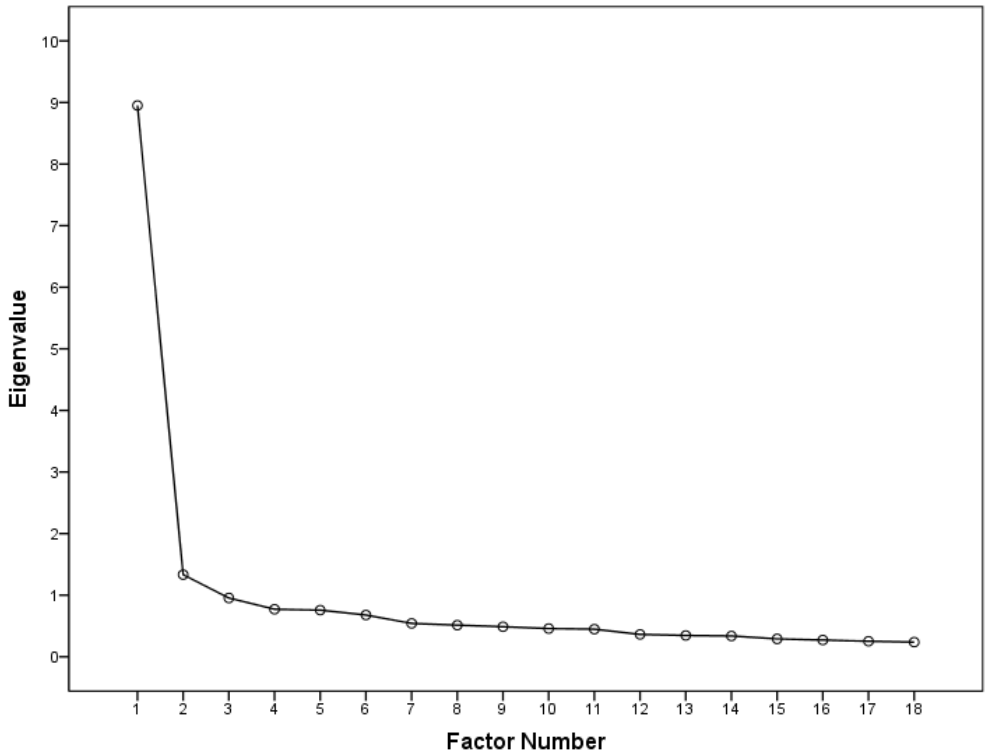

Figure 7. Scree plot for social skills subscale. From exploratory factor analysis of unrotated factor solution.

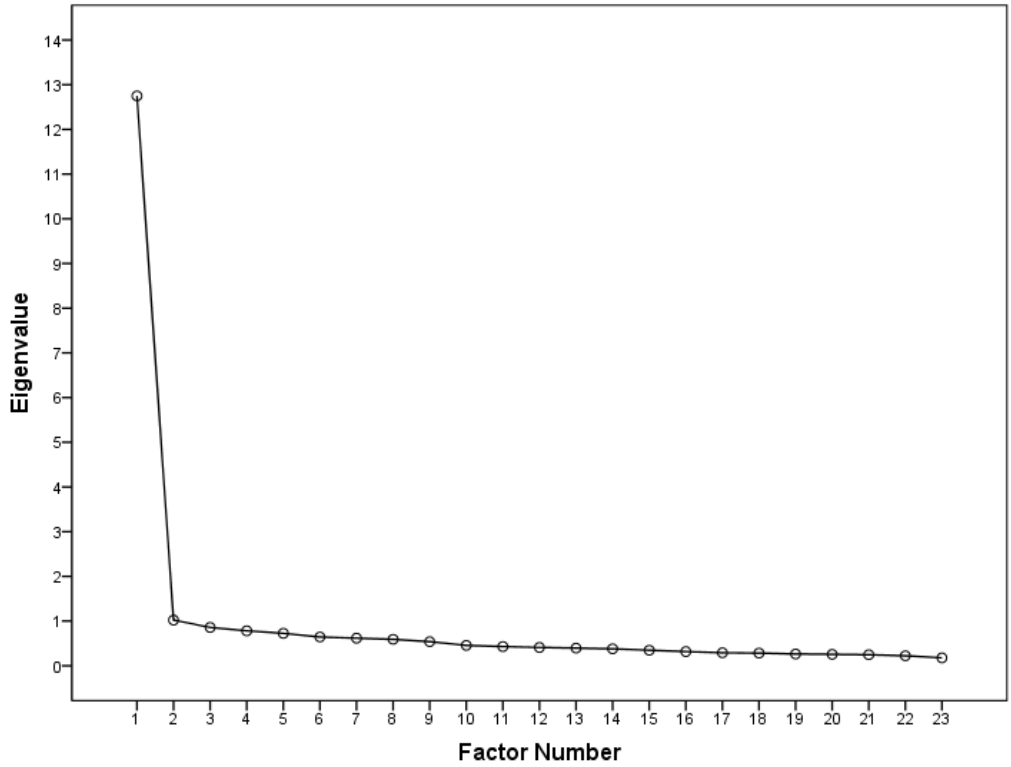

Figure 8. Scree plot for leadership subscale. From exploratory factor analysis of unrotated factor solution.

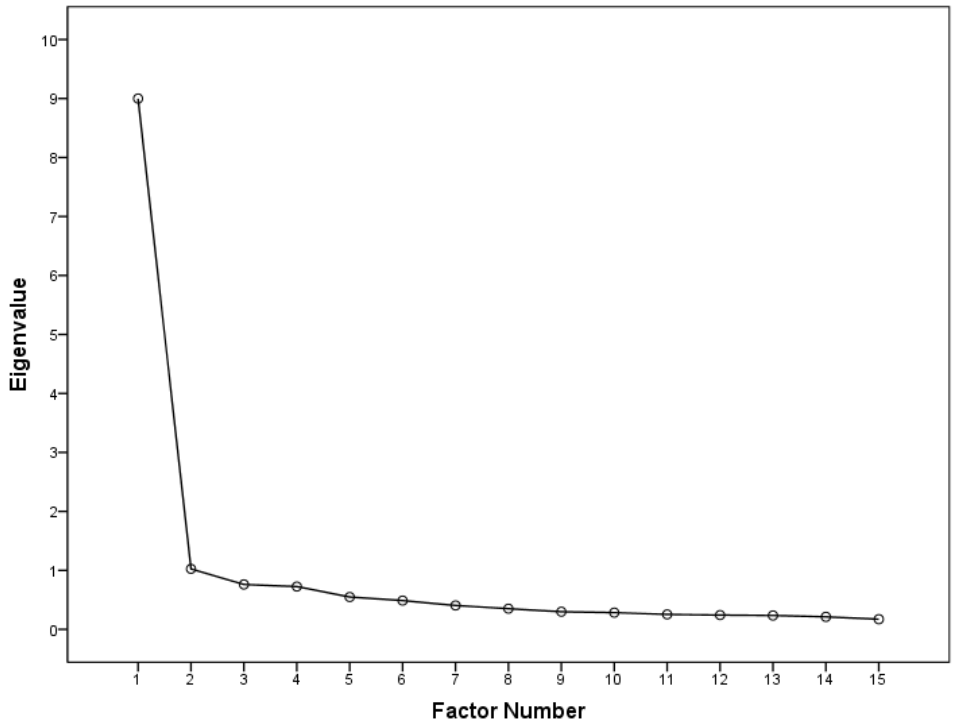

Figure 9. Scree plot for problem solving and decision making subscale. From exploratory factor analysis of unrotated factor solution.